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# SCIENTIFIC INFORMATION REPORT CHINESE SCIENCE

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SCIENTIFIC INFORMATION REPORT  
CHINESE SCIENCE (36)

This is a serialized report consisting of unevaluated information prepared as abstracts, summaries, and translations from recent publications of the Sino-Soviet Bloc countries. Individual items are unclassified unless otherwise indicated.

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TRANSLATIONS FROM CHINESE JOURNAL OF MEDICINE

(CHUNG-HUA I-HSUEH TSA-CHIH)

Vol 49, No 2, 1963

DIFFERENTIAL DIAGNOSIS OF EPIDEMIC ENCEPHALITIS B

[Following is a translation of an article by Ch'iu Fu-hsi, Jen Kwang-hung, T'sao Hui-lin, and Chang Lu-hsien, Department of Virology, Chinese Academy of Medical Sciences, Tu Shu-ming, Peiping Children's Hospital, T'sui Chen-yu, Peiping Communicable Diseases Hospital No 1, Wu An-jan, Peiping Union Hospital, Chinese Academy of Medical Sciences, and Chou Pao-hua, Peiping Communicable Diseases Hospital No 2, in the Chinese-language periodical Chung-hua I-hsueh Tsa-chih (Chinese Journal of Medicine), Vol 49, Peiping, No 2, 1963, pp 75-81.]

In clinical diagnosis of epidemic encephalitis B, cases have often been confused with those suffering from other diseases. Although toxic dysentery accompanied by central nervous symptoms, tuberculous meningitis, etc., (1) are in certain manifestations similar to encephalitis B, they generally can be differentiated by careful clinical observations and laboratory examinations together with epidemiological analysis. However, clinical manifestations of some other non-bacterial meningitis due to viruses (2,3) are more difficult to differentiate from the mild type of encephalitis B. Differentiation must often depend upon laboratory diagnosis.

Since the use of complement-fixation tests by Sung Kan et al (4) in Peiping for specific diagnosis of encephalitis B, this work has been successively developed in other places. Up to the present, however, the single encephalitis B virus antigen for serological examination is still used in China and elsewhere with very few reports on differential diagnosis carried out with multiple antigens centered on encephalitis B (5,6).

Observations on the specific diagnosis carried out in Peiping during the past few years showed that, each year in a considerable portion of cases clinically diagnosed to be encephalitis B, the complement-fixation antibody remained negative or showed insignificant rises throughout the course of the disease (7). It may be deduced that most of these cases probably belonged to viral encephalitis other than encephalitis B or non-bacterial meningitis.

Therefore, in 1959 and 1960, we carried out studies on the differential diagnosis of encephalitis B in the Peiping area. Based on the existence of various diseases in this district and the possibility of their clinical confusion with encephalitis B, differential diagnosis of the multiple causes were centered on several viral diseases including, in addition to encephalitis B, poliomyelitis, epidemic parotitis (abbr. parotitis below), coxsackie, ECHO and lymphocytic choriomeningitis (abbr. LCM below). This article reports on tests with 121 cases of suspected encephalitis B with negative complement-fixation test, and the results of clinical differential diagnosis.

#### Material and Method

##### I. Serological Test

Complement-fixation test: During the summer and autumn of 1959 and 1960, sera were collected during the acute stage (within one week of the illness) and convalescent stage (3-4 weeks of the illness) of 213 cases of suspected encephalitis B, of which 158 cases were children (under 12 years of age) and 55 adults. Examination by encephalitis B complement-fixation test (8) showed more than a four-fold increase in encephalitis B antibody in 74 cases (54.7%), twofold in 18 cases (8.5%); and negative results in 99 (62.7%) of the 158 children and 22 (40.0%) of the 55 adults, or a total of 121 cases (56.8%) (7). Complement-fixation tests using many types of antigens were carried out simultaneously on the sera of the acute and convalescent stages of 76 of these 121 cases. In these tests mixed antigens of poliomyelitis types I, II and III viruses (8); antigens of coxsackie group A type 9 and group B type 5 virus; soluble antigen (S antigen) (9) of parotitis virus and antigen of LCM virus (10) were used with corresponding antigens of normal tissue as controls. The microquantitative method (spiral circle--plastic board) (8) was employed.

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Neutralization test: Complement-fixation test sera of the acute and convalescent stages of the four cases with positive poliomyelitis among the 121 cases were each diluted four-fold and used in the neutralization tests with polio virus (the amount used was 100 TCID<sub>50</sub>) in tubes of primary human amniotic cell culture to determine the neutralizing antibody therein.

II. Isolation and Determination of Virus

Stools (made into 20% suspension by adding 5% vegetative activated carbon, the supernatant clear liquid after sedimentation was taken and penicillin and streptomycin added) of 101 early cases and cerebro-spinal fluids of 49 early cases among the 121 were taken and stored under low temperature. In the tests, the above specimens were inoculated into monkey kidney cell culture tubes, placed in 37°C and observed continuously for 10 days. Subcultures were made on those with definite or doubtful cellular changes. Those positive after two subcultures were determined by neutralization tests. The dilution of virus used in the determination was 10<sup>-2</sup>. Standards used were sheep antiserum of poliomyelitis virus types I-III, rabbit antiserum of coxsackie virus group A type 9 and group B types 1-5, and rabbit antiserum of ECHO virus types 4, 6 and 9. Virus was mixed with the serum and after incubation for one hour in a water bath at 37°C, inoculated into the cell culture tube, cultivated at 37°C and observed for seven days successively.

In addition, the early-stage stool specimens of the 43 cases and the early-stage cerebro-spinal fluids of the 48 cases of the 121 patients were each inoculated into a suckling mouse from a litter 1-2 days old. The stool specimens were introduced intraperitoneally and the cerebrospinal fluids intracranially and observed for two weeks. Subcultures were made on those showing definite or suspicious pathological changes. Those that were positive after more than two generations were determined by neutralization tests against the standard rabbit antiserum of coxsackie virus Group A types 1-10 and group B types 1-5 and observed for two weeks.

The early-stage cerebrospinal fluids of the 48 cases among the 121 were also inoculated into five mice three weeks old. Each was inoculated with 0.03 ml intracranially and observed for three weeks.

### III. Case Analysis and Diagnosis

The cases observed were those with suspected encephalitis B admitted to the Peiping Children's Hospital and the Peiping Communicable Diseases Hospitals Nos 1 and 2 during the summer and autumn seasons (the epidemic season of encephalitis B in this district) of 1959 and 1960. Clinical manifestations were analyzed and the cases were divided into five groups: encephalitis, doubtful encephalitis, non-bacterial meningitis, paralytic poliomyelitis and parotitic meningo-encephalitis with parotid enlargement.

Conditions for the encephalitis group were: (1) fever; (2) headache (those that could complain); (3) apparent manifestations of encephalitis (disturbance of consciousness; sleepiness, stupor, semicoma, coma or dementia, delirium or mental disorder, convulsions, tremor or muscular spasms, disturbance of speech, motor ataxia or nystagmus, tonic paralysis, pathological reflexes, etc.); (4) Meningeal irritations (nausea, vomiting, stiffness of neck, Kernig's sign, Brudzinski's sign, etc.); and (5) increased leucocyte count (20-several hundred per cubic mm) of the cerebrospinal fluid, mostly of monocytes (polymorphonuclear leucocytes may be greater during the early stage); increase of albumin content in most cases; no decrease of sugar content and no bacteria.

Conditions for the doubtful encephalitis group were similar to those stated above but manifestations of encephalitis were not definite or only transient. Conditions for the non-bacterial meningitis group were: (1) fever; (2) headache; (3) meningeal irritations; (4) no apparent encephalitis manifestations; and (5) cerebrospinal fluid changes as above. Conditions for the paralytic poliomyelitis group were similar to those for non-bacterial meningitis but during the course of the illness there were manifestations of varied degrees of flaccid paralysis of the muscles of the face or the extremities. Conditions for parotitic meningoencephalitis with parotid enlargements were similar to those for non-bacterial meningitis but with varied degrees of parotid enlargement during the course of illness. Clinical manifestations of these cases were analyzed and grouped, and the final diagnosis was determined based on the serological and virological results together with the epidemiological data. Comparisons of the final diagnosis on these groups were also carried out.

Results

I. Serological Determinations

The sera of 45 of the 121 cases with negative encephalitis B complement-fixation were all consumed in this test. The sera collected during the acute and convalescent stages of the other 76 cases were used to carry out the complement-fixation tests with multiple antigens simultaneously. The results are seen in Table 1.

Of the five cases with a twofold rise of poliomyelitis complement-fixation antibody, flaccid paralysis appeared in three during the late-stage of the illness. In one of these cases, poliomyelitis virus type I was isolated from the early-stage stool specimen; in another case the second serum specimen was taken at an earlier time (7th day of the illness) and poliomyelitis virus type I was isolated from the early-stage stool; and in the third case the first serum specimen was taken at a later time (28th day of the illness).

In three cases, the acute-stage sera were not sufficient for the complement-fixation test against the poliomyelitis virus antigen. However, their convalescent sera showed positive reactions against this antigen. One of these cases had a titre of 1:64 and flaccid paralysis occurred during the late stage of the illness; one had a titre of 1:16; and although the titre of the third case was 1:8, the temperature showed a double-wave type of fever.

Of the four cases with a twofold rise of parotitis complement-fixation antibody, the second serum specimens of two cases were taken at a comparatively early time (11th and 12th days of the illness) and parotid enlargements appeared during the late stage of the illness; and the second serum specimens of the other two were taken at a later time (90th and 105th days of the course).

There were three cases in which the convalescent sera were positive for parotitis antibody and the titres were all 1:16. As stated above, in six of the cases with a two-fold rise of poliomyelitis or parotitis antibody, the interval between taking the first and second serum specimens was either comparatively short or too long. It was estimated that if they were taken at suitable intervals, the antibodies might show more than a four-fold rise. In addition, in one child patient (one year old), the Coxsackie group B type 5 virus antibody showed a twofold rise in the

Table 1 Results of complement-fixation tests with multiple antigens on sera of 76 of the 121 cases with negative encephalitis B complement-fixation test

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serum. Clinically, in addition to manifestations of non-bacterial meningitis, paralysis of facial muscles and myocarditis developed during the course of the illness.

These situations corresponded to the manifestations of Coxsackie group B type 5 virus infection. In another case, the convalescent serum had a titre of 1:8 for Coxsackie group A type 9 virus antibody. Coxsackie group A type 9 virus was isolated from the early-stage stool. Cases that showed a twofold rise of antibodies with a convalescent serum titre of over 1:8 and with clinical characteristics and results of virus isolation, together with the consideration of the intervals between the takings of the first and second serum specimens, and the titres of the positive convalescent serum antibody, could, we believe, be classified as positive.

Among the 25 cases with unknown results, the poliomyelitis complement-fixation antibody of two child patients showed a twofold rise. The parotitis complement-fixation antibody of another two showed a twofold rise, and the titre of parotitis complement-fixation antibody of the convalescent serum of still another two was 1:8.

Because the serum in these six cases was taken at suitable times and no paralysis or parotid enlargement was manifested clinically, they were classified as producing unknown results.

The second serum specimens of two cases were taken at a comparatively early time (7th and 11th days of the illness), and that of still another two were taken at a comparatively late time (60th and 107th days). It was estimated that if the sera were taken at suitable times, it would be possible to determine certain antibodies.

The sera of four cases with positive poliomyelitis complement-fixation test and polio virus isolated from stools were examined for neutralization antibodies. Results showed that the neutralization antibodies, identical to the types of virus isolated (three cases were type I and one case was type III poliomyelitis virus), all apparently increased during the convalescence.

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Table 2 Results on isolation of virus in stools of 101 of the 121 cases with negative encephalitis B complement fixation using monkey kidney cells

Patient	No. isolated	Total No of positive	Poliomyelitis			Type of Virus			
						Coxsackie A9	ECH09	Non-polio virus* caus- ing changes in monkey kidney cells	Not identi- fied
			I	II	III				
Children	90	17	4	1	1	4	1	3	3
Adults	11	4	2	0	0	0	0	0	2
Total	101	21 (20.8%)	8 (7.9%)			4 (4.0%)	1 (1.0%)	3 (3.0%)	5 (4.9%)

\*Could not be neutralized when determined with poliomyelitis antiserum.

## II. Virus Isolation and Identification

### 1. Stools:

(I) Isolation and identification results using monkey kidney cells (Table 2): Result of virus isolation using monkey kidney cells on early-stage stools (95% was collected within the first week of the illness) of 101 cases (90 children and 11 adults) showed cellular changes in a total of 21 (20.8%). Identification procedure was as follows: a neutralization test of the isolated virus was first carried out against three types of poliomyelitis antiserum. If the strain of virus was not neutralized, the identification was carried further using six types of Coxsackie virus antiserum. If neutralization still had not taken place, the strains of virus were finally tested against three types of ECHO virus antiserum.

Results of multiple-antigen serological examinations together with those of viral isolation and identification using monkey kidney cells are seen in Table 3.

(II) Results of isolation and identification of virus using 1-2 day old suckling mice: Virus isolations from early-stage stools of 43 cases (37 children and 6 adults) out of the 121 cases were carried out using 1-2 day old suckling mice. As a result, mice inoculated with stool from one child-patient became ill with paralysis of the extremities. This strain of virus was not neutralized when tested with Coxsackie virus group A types 1-10 and group B types 1-5 antiserum. Thus it might belong to a Coxsackie group A type other than types 1-10.

### 2. Cerebrospinal fluids:

(I) Results on isolation and identification of virus using monkey kidney cells: Viral isolations of the early-stage cerebrospinal fluids of 49 (38 children and 11 adults) of the 121 cases were carried out using monkey kidney cells. As a result, Coxsackie group A type 9 virus was isolated from the cerebrospinal fluid of one child-patient. In this case, the multiple-antigen complement-fixation test was not done because the serum had been exhausted after the encephalitis B complement-fixation test.

(II) Results on isolation of virus using 1-2 day old suckling mice: Viral isolations from the early-stage cerebrospinal fluids taken from 48 (37 children and 11

Table 3 Results on multiple-antigen serological examinations and monkey kidney-cell isolation of virus from the 121 cases with negative encephalitis B complement-fixation test

Multiple antigen complement-fixation test*	No. of cases	No. of cases positive for virus isolated from stools using monkey kidney cells				
		Poliomyelitis		Coxsackie A <sub>9</sub>	ECHO <sub>9</sub>	Non-polio virus causing changes in monkey kidney cells
		I	II	III		Not identified
Poliomyelitis	24	5	1			
Parotitis	21					
Coxsackie virus infection	12	2			1	
Unknown	25	4				
Not done**	45	1	1	3	1	3

\*ECHO virus antigen not included.

\*\*Serum exhausted after the encephalitis B complement-fixation test.

adults) of the 121 cases were carried out in 1-2 day old mice. The results were all negative.

(III) Results of viral isolation using three-week old mice: Viral isolations from the early-stage cerebrospinal fluids of 48 (38 children and 10 adults) of the 121 cases were carried out in three-week old mice. Results were all negative.

### III. Case Analysis and Diagnosis and Their Major Clinical Manifestations

Analysis of the clinical manifestations of the 121 cases with negative encephalitis complement-fixation tests showed that they may be divided into the following groups: encephalitis, 19.8%, doubtful encephalitis, 19.0%; non-bacterial meningitis, 47.9%. In addition, analysis and grouping were also carried out on the clinical manifestations of the 92 cases with increased encephalitis B antibody and the final diagnosis of encephalitis B. Of these, 80.4% were grouped under encephalitis, 15.2% under doubtful encephalitis, and only 4.4% under non-bacterial meningitis (7).

The final diagnosis of the 121 cases with negative encephalitis B complement-fixation test and different groupings of clinical manifestations are seen in Table 4. Among the 24 cases grouped by their clinical manifestations under encephalitis, the final diagnosis of 10 cases was encephalitis of unknown origin and that of four cases was paralytic poliomyelitis.

Of the 23 cases grouped under doubtful encephalitis according to their clinical manifestations, one of each case was finally diagnosed as encephalitis of unknown origin and paralytic poliomyelitis. The rest were non-bacterial meningitis due to various causes of which eight were parotitic meningoencephalitis with no parotid enlargements.

However, there was no encephalitis of unknown origin among the 58 cases grouped clinically under non-bacterial meningitis and only one paralytic poliomyelitis was present. The great majority (56 cases) were non-bacterial meningitis of various causes. Of these 31 were known (14 cases of non-paralytic poliomyelitis, 13 parotitic meningoencephalitis with no parotid enlargement, and 4 Coxsackie virus meningitis) and 25 unknown.

Table 4 Final diagnosis of the 121 cases with negative encephalitis complement-fixation test and different grouping of clinical manifestations

Grouping of clinical Manifestations	No of cases (%)	Final Diagnosis						Others of un- known origin	
		Poliomyleitis		Parotitic meningo- encephalitis		Coxsackie V meningitis			
		Non Para- lytic	Para- lytic	Parotid not en- larged	Parotid en- larged	A <sub>9</sub>	B <sub>5</sub>		
Encephalitis	24 (100.0%)	2 (8.3%)	4 (16.6%)	3 (12.6%)		1 (4.2%)	1 (4.2%)	10 (41.6%)	
Doubtful Encephalitis	23 (100.0%)	4 (17.4%)	1 (4.3%)	8 (34.8%)		3 (13.1%)	1 (4.3%)	1 (4.3%)	
Non-bacterial Meningitis	58 (100.0%)	14 (24.1%)	1 (1.7%)	13 (27.6%)		2 (3.4%)	2 (3.4%)	25 (43.1%)	
Paralytic Poliomyleitis	11 (100.0%)		11 (100.0%)						
Parotitic meningoencephalitis with parotid enlarged		5 (100.0%)			5 (100.0%)				
Total	121 (100.0%)	20 (16.5%)	17 (14.1%)	24 (19.8%)	5 (4.1%)	6 (5.0%)	4 (3.3%)	32 (26.5%)	
								11 (9.0%)	
								2 (1.7%)	

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 \*Final diagnosis was post-rubella encephalitis according to clinical observation.  
 \*\*Final diagnosis was tuberculous meningitis according to clinical observations.

Table 5 Final diagnosis and major clinical manifestations of 94 of the 121 cases with negative encephalitis B complement-fixation test

Major Clinical Manifestations											
Final Diagnosis	No. of cases	Sudden onset	Course of fever	Headache	Nausea	Vomiting	Disturbance of Consciousness	Convulsions	Paralysis	Facial palsy	Cerebrospinal fluid
Non-paralytic myelitis	c 16	11	2 7 7 3 10 3 9	4 10 13 12 3 2 2						10 6 10 11	
Paralytic myelitis	a 3	1	3 1 2	3 1 3 2 1						3 2 3	
Paralytic meningoencephalitis	c 14	7	2 7 5 1 11 2 5	4 7 12 7 2 5 9	8 6					12 2 12 12	
Parotitic meningoencephalitis	a 1	1	1 1 1	1 1 1	1	1		1	1		
Coxsackie A virus meningitis	c 15	8	4 6 5 4 7 4 11 10 14 13 13	14 13 13 2 4					3 8 7 10 12		
B virus meningitis	a 7	3	2 4 1 2 2 3 7 6 5	6 2				3	3 6 1 6 4		
Non-bacterial meningitis of unknown origin	c 19	12	6 6 7 7 8 14 7 6 7 15 10	14 7 6 7 15 10 2 4 1					14 5 16 17		
Unknown	c 3	2	4 1 4 3 2 2 1 3 1 3	1 3 1 2 1 3 1 3	1	1			1 4 1 3 4		
	a 1	1	1 1 1 1 1 1 1 1 1 1	1 1 1 1 1 1 1 1					1 1 1 1		

c--children, a--adults

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The final diagnosis and the major clinical manifestations of the more completely recorded 94 of the 121 cases were listed and compared as seen in Table 5. From this table it can be seen that more of the non-paralytic poliomyelitis had a sudden onset, while about half of the other diseases had a sudden onset and half, a gradual one. Most of the fever was of medium range or high, and the course usually lasted 4-7 days. Severe headache and projectile vomiting were more common in parotitic meningoencephalitis cases.

Signs of meningeal irritation were present in most of the cases mentioned above with a mild degree of disturbance of consciousness (mostly lethargy). Convulsions and pathological reflexes were rarely seen. In addition to the various degrees of paralysis of facial muscles and extremities in paralytic poliomyelitis cases, facial paralysis was also seen in Coxsackie virus meningitis cases.

Few of the cases identified as parotitic meningoencephalitis developed parotitic enlargements during the course of the disease. Most of these cases with varied causes were of a mild or medium type; white blood cell count of blood slightly increased or normal; white blood cell count of the cerebrospinal fluid mostly 20-200/cmm with mononucleocytes a common finding; albumin content increased in most cases with no decrease in sugar content.

In one case, a strain of Coxsackie virus group A type 9 was isolated from the cerebrospinal fluid using monkey kidney cells. This case had a gradual onset, medium fever lasting for 10 days, headache, nausea and vomiting, and lethargy, all of a mild type. The white blood cell count of the cerebrospinal fluid was 278/cmm.

Discussion

In endemic encephalitis B areas, some other diseases having similar clinical manifestations could very well be confused with cases of doubtful encephalitis B which occurred during the summer and autumn seasons. Differential diagnosis of these cases would not only help in the clinical understanding of these diseases but also, more importantly, be significant epidemiologically in correcting incidence and mortality rates and showing the types of diseases which occurred simultaneously at a certain place in certain seasons. This would help in the employment of different preventive and treatment measures for the various diseases.

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There are very few reports in the literature on differential diagnosis of multiple viral diseases centered around encephalitis B. Chia-yeh-li-tso (5) mentioned that cases with positive parotitis serum reactions (17/78, 21.8%) were found among those with negative encephalitis B complement-fixation test. Shih-ching-ch'ing-ts'ang (6) in his serological studies on doubtful encephalitis B cases, accumulated in a period of 11 years in Tokyo, Japan, found that a minority of the cases were poliomyelitis (6/47), parotitis (8/66) and leptospirosis (1/22) with no LCM, St. Louis encephalitis or simple herpesencephalitis. Sung Kan et al (11) inferred that meningitis caused by Coxsackie virus might be confused with encephalitis B. Ku Fang-chow et al (12) in Shanghai isolated 2 strains of poliomyelitis virus from stools of 31 doubtful encephalitis B cases. Wu An-jan (13) in Peiping also isolated three strains of poliomyelitis from stools of 13 doubtful encephalitis B cases. These reports served as clues in studies on differential diagnosis of encephalitis B.

Among the 121 cases with negative encephalitis B complement-fixation test reported here, many were diagnosed serologically as poliomyelitis and parotitis as well as Coxsackie virus infections (Table 1). Polio virus meningitis was more common in children and parotitic meningo-encephalitis more common in adults, a finding which also corresponded to the clinical situation.

Viruses were isolated from stools of 21 cases; seven of them were identical to the serological diagnosis, five were not identified, and serological identification of the other nine cases were not carried out due to insufficient amounts of serum (Table 3). Ku Fang-chow et al (14) in 1959-1960 studied viral distributions in the intestines of healthy children in Peiping and from the collective stools of the children isolated some poliomyelitis virus, Coxsackie virus and ECHO virus.

Among these, Coxsackie group A virus was the most common, and only one strain of type 9 virus was found. ECHO virus was the least common. Furthermore, no ECHO type 9 virus was isolated. In nine of the cases we observed, serological identifications were not done but intestinal virus was isolated from the stools. Although the possibility of incidental virus carrier could not be excluded, according to the types isolated (Poliomyelitis types I, II and III; Coxsackie Group A type 9; and ECHO type 9), they were all viruses that might cause non-bacterial meningitis (3).

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Furthermore, results on antibody examination of encephalitis B were all negative and the clinical manifestations also corresponded to non-bacterial meningitis. Therefore, we believed that there was a possibility that the viruses isolated from these nine cases were the causes of the diseases.

Isolation of virus from the cerebrospinal fluid of patients has a definite diagnostic significance. In one of our cases, Coxsackie virus group A type 9 was isolated from the cerebrospinal fluid.

Of our cases finally diagnosed as encephalitis B, most were encephalitis according to clinical groupings. They had more typical or apparent encephalitis manifestations, which of course resulted in a higher rate of accuracy in the clinical diagnosis. However, of the cases with negative encephalitis B complement-fixation test, fewer were grouped clinically as encephalitis; a few more were grouped under doubtful encephalitis; and a greatly increased number was grouped under non-bacterial meningitis.

The final diagnosis of these cases with negative encephalitis B complement-fixation test (Table 4) indicated that possibilities of causes other than encephalitis B should be well considered in those cases clinically grouped as non-bacterial meningitis or doubtful encephalitis. The tendency of variation was fundamentally identical to encephalitis and non-bacterial meningitis of varied causes that were grouped under three types according to their clinical manifestations observed in 1961 by Lennette et al (15).

During the past few years, the positive rate of clinical diagnosis of encephalitis B in the Peiping area was lower than before, in spite of improved methods of complement-fixation test, which indicated an actual decrease in incidence of this disease. The considerable number of clinically doubtful encephalitis cases which persisted each year were presumably the result of an increased ratio of meningo-encephalitis due to other viruses. This situation was probably due to enforced clinical emphasis on encephalitis B and an increase in the number of cases diagnosed as doubtful encephalitis, thus resulting in a greater chance of including cases of meningoencephalitis caused by other viruses.

Establishment of an accurate diagnosis of a communicable disease must depend on a combined analysis of data in epi-

demiology, clinical manifestations and experimental diagnosis. In clinical differentiation of encephalitis B, detailed clinical observations, cerebrospinal fluid examination, and stool and blood smears should be carefully carried out to rule out those related bacterial and parasitic diseases, such as toxic dysentery accompanied by central nervous symptoms, toxic dyspepsia, acute enteritis, malignant malaria, tubercular meningitis as well as other bacterial meningitis, etc., frequently confused with severe type of encephalitis.

In addition, attention should be paid to characteristic manifestations such as varied degrees of paralysis and parotitic enlargement, pain in the extremities, hepatomegaly and splenomegaly, jaundice, etc., which appeared during the course of disease. We must also differentiate between paralytic poliomyelitis, parotitic meningoencephalitis with parotid enlargement, and leptospirosis with meningeal manifestations, etc.

In cases with apparent paralysis or parotid enlargement, a definite diagnosis may then be made clinically, whereas those with only paralysis of facial muscles or a decrease of muscular tension of the extremities, or a mild incomplete paralysis, as well as those with only submaxillary gland enlargement or inapparent parotid enlargement can easily be neglected and frequently diagnosed as encephalitis B during the epidemic seasons of this disease.

Cases of meningoencephalitis caused by other viruses and simple leptospiral meningitis are difficult to differentiate clinically from the mild or non-typical encephalitis B. The differentiation depends mainly on serology. We believe that in cases with negative encephalitis B complement-fixation test, further examinations should be made with multiple antigens including at least the poliomyelitis and parotitis virus antigens and, if possible, the Coxsackie virus group A type 9, a certain type of Coxsackie group B virus (cross reactions existed among the various types of Coxsackie group B virus), and ECHO types 4, 6 and 9 virus antigens. In the south, leptospiral antigen should also be included in addition to those mentioned above.

Henceforth, research pertaining to differential diagnosis of encephalitis B to be developed at several districts of varied representative natures in China should be taken into consideration. This should be done to clarify the types of diseases easily confused with encephalitis B in the varied

C-O-N-F-I-D-E-N-T-I-A-L

places. In a portion of the cases we observed, the origins of diseases were still unknown after differential diagnosis. This indicated the existence of still other causes such as ECHO virus, simple pustular virus, cerebromyocarditis virus, etc., all worthy of further studies. Isolation of non-encephalitis B virus from the cerebrospinal fluid of still more cases of doubtful encephalitis is also worthy of further investigation.

Excerpt

I. During the summer and autumn of 1959 and 1960 studies were carried out on the differential diagnosis of encephalitis B in the Peiping area. An encephalitis B complement-fixation test was carried out with acute-stage and convalescent sera obtained from 213 doubtful encephalitis B cases. There were 121 with negative results. Among these 121, duplicate multiple antigen complement-fixation tests carried out in 76 cases resulted in a positive poliomyelitis rate of 31.6%; parotitis, 27.6%; Coxsackie group A type 9 and group B type 5 virus infections, 2.6% and 5.3% respectively; LCM, 0%, and unknown, 32.9%.

II. From the 121 cases, virus isolation carried out in early-stage stools of 101 patients using monkey kidney cells resulted in a positive rate of poliomyelitis virus (mostly type I) of 7.9%; Coxsackie group A-type 9 virus 4.0%; ECHO type 9 virus 1.0%, non-poliomyelitis virus that caused changes in monkey kidney cells (not further identified) 3.0%; and unidentified positive, 4.9%.

A strain of Coxsackie group A virus other than the 1-10 types was isolated from the early-stage stools of 43 cases using suckling mice 1-2 days old.

III. A strain of Coxsackie group A type 9 virus was isolated from the early-stage cerebrospinal fluids of 49 cases using monkey kidney cells. Results of virus isolation from early-stage cerebrospinal fluids of 48 cases using 1-2 day old suckling mice and three week old mice were all negative.

IV. Clinical manifestations of 121 cases with negative encephalitis B complement-fixation test were analyzed and grouped. Among them, 19.8% were grouped under encephalitis, 19.0% under doubtful encephalitis and 47.9% under non-bacterial meningitis. Among the cases clinically grouped

under encephalitis, the final diagnosis of 41.6% was encephalitis of unknown causes, 16.6% paralytic poliomyelitis and 37.6% non-bacterial meningitis of various causes. In those clinically grouped under doubtful encephalitis, there was a marked increase (91.4%) in non-bacterial meningitis of various causes. In those grouped under non-bacterial meningitis, the non-bacterial meningitis of various causes increased to 96.6%.

V. Diagnosis and differential diagnosis relating to encephalitis B were discussed and suggestions on further studies presented.

This work was supported by Prof. Chu Fu-t'ang, Assistant researcher Sung Kan, and Drs. T'ien Pao'hsin and Liu Chi-ch'ang; and assisted by Dr. Liu Lan-sheng.

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(CONFIDENTIAL)

DOUBLE-NUCLEATED LYMPHOCYTES IN THE NORMAL BLOOD  
IN CHINESE

[Following is translation of an article by Wang Sheng-yuan, Department of Histology, Peiping Medical College; in the Chinese language periodical Chung-hua I-hsueh Tsa-chih (Chinese Journal of Medicine), Vol 49, No 2, 1963, pp 82-83.]

The double-nucleated lymphocyte is a formed component of the blood very rarely seen under general circumstances and very seldom reported in the literature. Recently, with the rapid development of atomic energy for peaceful uses as well as the day by day advancement in the early investigation of damages caused by small dosages of radiation, this type of cell has become significant in diagnosis and has attracted increasingly greater attention (1-7). Hence, in the course of the studies of the normal blood picture in Chinese, a comparatively detailed observation was made on this rare type of component. This was done to accumulate data on its normal value and to serve as a reference when its clinical significance was to be considered.

Material and Method

The object for examination was identical to that reported in the previous article (8) with a total of 116 healthy adults (male 76 and female 40) not engaged in radiation works who had received no radiation damage. Conditions for blood taking (terminal blood) and preparation were as stated in the previous article (8). In each case, 2,000 white blood cells were observed after smears were obtained by Wright's method. In addition to the positive rate, the frequency of appearance of the double-nucleated lymphocytes was also estimated.

Results

I. Morphology of the double-nucleated lymphocytes: The definition of double-nucleated lymphocytes was not clearly recorded in the literature. The nomenclature was also not uniform (1,2,4,5). To clarify the conception, the double-nucleated lymphocytes seen here were divided into two types, according to the forms of the nuclei.

1. Double-nucleated lymphocytes: This type belonged to true double-nucleated lymphocytes. The outline and structure were all identical to general lymphocytes except for the existence of two nuclei (diagram 5-9). Each of the two nuclei was surrounded by a complete membrane separated from each other but identical in structure with dense chromatin and usually invisible nucleoli about the same size or, perhaps occasionally, one slightly larger than the other. Each nucleus was surrounded by a transparent band typical of lymphocytes. Cytoplasm appeared pale blue in color, comparatively clear, and granules were seldom seen.

2. Double-lobed nuclear lymphocytes: This type did not actually belong to the true double-nucleated lymphocytes. Although there was a tendency for the nucleus to divide into two, they were not actually separated (diagram 1-4). It was termed, therefore, a "double-lobed nucleus." There were many forms of double-lobed nuclei. There might be a deep indentation at the middle part that seemed to divide the nucleus into two (diagram 1) or an elongated nucleus twisted and doubled up (diagrams 2,3); or a nucleus with both ends enlarged and narrowing at the middle (diagram 4), etc. Except for the tendency of double lobing on the outside of the nucleus, the various structures of this type of cells were identical to ordinary lymphocytes.

The two types of double-nucleated lymphocytes mentioned above were found in all three groups of large, medium, and small lymphocytes but more in the medium sized cells.

II. Rate of appearance of double-nucleated (and double-lobed nuclear) lymphocytes:

1. Double-nucleated lymphocytes: They were very rarely seen in the blood smears of normal subjects and generally very difficult to find when less than 1,000 of the white blood cells were observed. We observed 2,000 white blood cells in each case. This type of cell was found in only eight of the 116 cases (positive rate 7%). The frequency

of appearance of double-nucleated lymphocytes in these eight cases were: 0.5% white blood cells in five cases and 1% white cells in three cases, averaging 0.7% white cells (or 2.3% lymphocytes).

2. Double-lobed nuclear lymphocytes: These were also uncommon in blood smears of normal subjects but somewhat more numerous than the previous type. This component was found in 12 of the 116 cases (positive finding 10%). The frequency of appearance of double-lobed nuclear lymphocytes in these 12 cases were: 0.5% white cells in four cases, 1% white cells in five cases, 1.5% white cells in two cases and 2% white cells in one case, averaging 1% white cells (or 3.3% lymphocytes).

III. Mononucleocytes with lobated nucleus: While observing the double-nucleated lymphocytes and due to the comparatively large number of white cells counted, we also found the very rare mononucleocytes with lobated nucleus in the blood smears of normal subjects. They had typical characteristics of a mononucleocyte in both the appearance and structure (large cell body, oval in shape, scattered chromatin comparatively pale in color, no transparent band surrounding the nucleus, cytoplasm slightly basophilic and filled with numerous fine methylenophil granules, etc.), but with a two-segmented nucleus (diagrams 10, 11). A cell with a three-segmented nucleus was also seen (diagram 12). This type of cell was even more uncommon than the double-nucleated lymphocytes. They were seen in only four of the 116 cases and in each case, only one was seen in the observation of 2,000 white cells.

#### Discussion

The double-nucleated lymphocyte is rarely seen in the blood smears of normal subjects. In ordinary white cell differentiations, it is generally difficult to find because of the relatively small number of cells observed. According to literature reports, it may appear and increase in the blood of patients suffering from lymphocytic leukemia (9, 10), infectious mononucleosis (2) and infectious hepatitis (5). However, since each of the diseases mentioned above has other major clinical or blood characteristics, the double-nucleated lymphocytes surely have no specific significance.

Since Ingram et al (2-4) reported consecutively on men working on the revolving accelerator, as well as the apparent

increase of double-nucleated lymphocytes in blood of experimental animals when exposed to small dosages of radiation, and used this cell as an index for early diagnosis of chronic damages by small dosages of radiation, this cell has attracted wide attention and interest. The estimation of normal frequency of appearance of double-nucleated lymphocytes has also become significant from a practical point of view.

According to observations in this article, double-nucleated lymphocytes may be seen in 7% and double-lobed nuclear lymphocytes in 10% (appearance rate of former cell was 0.5-1%. white cells and later, 0.5-2%. white cells) of normal subjects or those who have received no radiation damage. Therefore, when this type of cell was used as an index in clinical diagnosis, these normal incidences should be taken into consideration. Furthermore, in a case that was positive, the appearance rate of double-nucleated lymphocytes should be > 1%. white cells, and double-lobed nuclear lymphocytes > 2% to be really significant.

Although the diagnostic value of double-nucleated lymphocytes in chronic damage by small dosages of radiation has attracted much attention during recent years, conclusions are still not uniform. According to our observations on blood pictures after chronic small dosages of X-ray irradiation (7), double-nucleated lymphocytes were positive in 6.7% of the people working in radiation. The appearance rate in the positive cases was 0.8%. white cells. These two values in the control subjects were 7.5% and 0.8%. white cells. Double-lobed lymphocytes were positive in 13.3% of the radiation workers with an appearance rate of 1.1%. white cells. In the control, the two values were 12.5% and 1%. white cells. This indicated that both types of double-nucleated lymphocytes showed no apparent increase in people working in radiation. In addition, in the animal experimentation portion of this work, examinations at various stages revealed no increase of double-nuclear and double-lobed nuclear lymphocytes in the blood of rats receiving chronically small dosages of X-ray irradiation compared to the control.

There may be two ways in which double nuclei of the lymphocytes are formed: one belongs to the proliferative non-filamented division of the nucleus; and the other may be degenerative changes and segmentation of the nucleus. The former may appear in normal lymph nodules (11) and may also be seen in the terminal blood of lymphocytic leukemia cases (9,10); the latter is believed to be a morphological

characteristic before solidification of the nucleus after the lymphocytes have been damaged by radiation (12). This latter view, however, has not yet been supported completely by other experiments with small dosages of radiation (13).

Conclusion

I. Observations were made on the double-nucleated lymphocytes in the terminal blood of 116 normal adults (subject to no radiation). They were done by observing 2,000 white cells in smears obtained by Wright's method to estimate the frequency of appearance of the cells.

II. The double-nucleated lymphocytes were divided here into two types: one type was double-nucleated lymphocytes; and the other, double-lobed nuclear lymphocytes. The former was a true double nuclear lymphocyte with two complete and separately existing nuclei; whereas the latter had only a tendency toward duplicated nuclei with no separation between the two lobes.

These two types of cells were both rarely seen in blood smears of normal subjects: the former was found in eight of the 116 cases (positive in 7%) and its rate of appearance in the positive cases was 0.5-1.0% white cells, averaging 0.7% white cells (or 2.3% lymphocytes). The latter was more numerous than the former and was positive in 12 of the 116 cases (positive rate = 10%); rate of appearance in the positive cases, 0.5-2% white cells, averaging 1% white cells (or 3.3% lymphocytes).

III. While observing 2,000 white cells in each of the 116 cases, one mononucleocyte with lobated nucleus was seen in each of four cases.

IV. According to our observations, if the appearance of double-nucleated lymphocytes in blood is used as a diagnostic index, we believe that the double-nucleated cells must be  $> 1\%$  white cells, and double-lobed cells  $> 2\%$  white cells to be of significance.

[Diagrams not available in this translation.]

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(Article received on 18 December 1962)  
(CONFIDENTIAL)

OBSERVATIONS ON THE ACTIVITIES OF SERUM CHOLESTERASE  
IN HYPERTENSIVE PATIENTS

[Following is a translation of selected portions of an article by Feng I-p'u, Chai Ch'i-hsien and Lei Hai-p'eng, Department of Pharmacology, Institute of Materia Medica, Chinese Academy of Medical Sciences; in the Chinese-language periodical Chung-hua I-hsueh Tsa-chih (Chinese Journal of Medicine), Peiping, Vol 49, No 2, 1963, pp 84-85.]

The mechanism of development of primary hypertension according to the theory proposed by Myacnikov was of neurological origin. He believed that external stimuli first created a neurosis, then caused vascular tension and reflex changes through the vegetative and body fluid systems, and, ultimately, resulted in hypertension. Based on this theory, the functional states of the vegetative nerves of hypertensive patients or animals would be worthy of study. Kakushkina and Mentova observed the activities of serum cholesterase in dogs before and after hypertension was produced. They found that after hypertension was produced, there was an increase in the serum cholesterase activities which also paralleled the blood pressure levels.

Farber reported that the serum cholesterase activity in hypertensive patients was higher than that of normal subjects. Studies of Schurtz and Tarakhovskii explained that drugs that induced a lowering of blood pressure in hypertensive patients also induced a lowering of cholesterase activity. However, Vorhaus as well as Hall and Lucas reported that no apparent difference existed between the serum cholesterase activities in hypertensive patients and normal subjects, and also that there was no relation between the serum cholesterase activities and blood pressure in hypertensive patients.

This study was aimed at observing if any difference existed between the serum cholesterase activities of hypertensive patients and normal subjects.

Based on findings of traditional Chinese medicine, the major signs of hypertension were in the three Ching of Shen, Kan, and Hsin. The Fu-wai Hospital, Chinese Academy of Medical Sciences, divided the hypertensive cases in terms of traditional Chinese medicine into the following types: Yang-k'ang, Yin-hsu Yang-k'ang, Yin-hsu, Yin-yang Liang-hsu and Yang-hsu.

Another aim of this study was to investigate the relation between the findings and classifications of the traditional medicine and serum cholesterase.

#### Conclusion

The activities of serum cholesterase of 46 normal and 95 hypertensive cases were estimated. Results showed that the activity of cholesterase in the patients was higher than that of the normal subjects.

During the earlier stage of hypertension before the appearance of Yang-hsu signs, there was an increase in the activity of serum cholesterase and, in later stages, after Yang-hsu signs had appeared, cholesterase activity returned to normal again.

There was no apparent relation between visceral discernment and blood pressure levels and the activities of serum cholesterase.

Statistical analysis was done by Comrade Jung Chen-p'eng, Division of Statistics, Chinese Academy of Medical Sciences.

(Article received on 24 July 1962)  
(CONFIDENTIAL)

THE EFFECT OF COXSACKIE VIRUS ON THE MULTIPLICATION  
OF LIVE POLIOVIRUS VACCINE IN THE INTESTINAL  
TRACT IN CHILDREN

[Following is a translation of selected portions of an article by Ku Fang-chou and Mao Chiang-sen, Department of Virology, and Mu Kuei-fan, Institute of Medical Biology, Chinese Academy of Medical Sciences; in the Chinese language periodical Chung-hua I-hsueh Tsa-chih (Chinese Journal of Medicine), Peiping, Vol 49, No 2, 1963, pp 86,88.]

After an attenuated live polio vaccine has been taken, multiplication of the vaccine virus may affect, to a great extent, the intensity of immunity produced. Hence, research on the factors that affect the multiplication of vaccine virus in the intestinal tract becomes very important. The factors are: dosage, order in which various types of vaccines are taken, immunity state in the child as well as the existence of various intestinal viruses in the intestinal tract, etc. Many authors have proved that intestinal virus was one of the major factors that affected immunization.

Sabin, Horstmann, and others pointed out that ECHO<sub>3,7,9</sub> types of virus; Coxsackie A<sub>7,11</sub>, B<sub>2,3</sub> and glandular virus types 2 and 16 may interfere with the multiplication of live vaccine virus. Voroshilova et al showed that ECHO<sub>2,3,14,17,19</sub> and Coxsackie B, affected unfavorably types I and III vaccine virus and serological reactions. However, some reports also showed that many intestinal viruses may coexist with polio-virus in the intestinal tract in man. To understand the relation between them, their multiplication situations must be studied. Little work has been done on this aspect. This article reports the effect of Coxsackie virus on the multiplication of poliovirus type I vaccine in the intestinal tract in children.

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Conclusion

I. The effect of Coxsackie group A virus on the multiplication of attenuated live poliovirus type I vaccine in the intestinal tract in children was studied.

II. Coxsackie A<sub>2</sub> virus did not interfere with the multiplication of poliovirus type I. The type I virus vaccine showed good multiplication in the presence of Coxsackie A<sub>2</sub> virus in the intestines of children. Coxsackie A<sub>8</sub> virus could also coexist with type I vaccine in the intestines of children, and type I virus multiplied prosperously.

III. Coxsackie A<sub>7</sub> virus apparently interfered with the multiplication of poliovirus type I vaccine in the intestines of children.

IV. Based on serological data, it showed that Coxsackie A<sub>2,3,8,10,14</sub> viruses did not affect the increase of type I neutralizing antibody.

(CONFIDENTIAL)

C-O-N-F-I-D-E-N-T-I-A-L

### OPHTHALMODYNAMOMETRY IN NORMAL CHINESE

[Following is a translation of a selected portion of an article by Li Shu-jen, Department of Eye, Ear, Nose and Throat, Fo-shan Hospital, Chung-shan Medical College, and Department of Ophthalmology, People's Hospital No 1, Fo-shan Special District; in the Chinese-language periodical Chung-hua I-hsueh Tsa-chih (Chinese Journal of Medicine), Peiping, Vol 49, No 2, 1963, p 89.]

Ophthalmodynamometry was carried out on 100 normal Chinese subjects. Clinical observations and analysis were done on the normal range of difference between the values of the two eyes as well as the difference between determinations taken in sitting and reclining positions.

(CONFIDENTIAL)

METHOIN RASH  
(A Report on Six Cases)

[Following is a translation of a selected portion of an article by Shen Ta-wei and Ch'ien Wu-ch'un, Department of Dermatology and Venereal Diseases, Hsinkiang Medical College; in the Chinese-language periodical Chung-hua I-hsueh Tsa-chih (Chinese Journal of Medicine), Peiping, Vol 49, No 2, 1963, p 105.]

Methoin is an effective agent for controlling epileptic seizures. It has been successfully manufactured in China since 1958. It is generally believed to have a therapeutic action equivalent to sodium phenytoin but with a lower toxicity. Only one case of drug rash caused by methoin has ever been reported in China. Therefore, its mechanism of development, clinical manifestations, etc., are little known. Since the employment of the drug in 1960 in the Department of Neurology of this hospital, a total of six cases have been admitted for treatment of methoin rash. Wherefore,

(CONFIDENTIAL)

THE BIOTERRACHEMICAL VIEW OF THE ETIOLOGY  
OF K'E-SHAN DISEASE

[Following is a translation of an article by Wang Fan, Li Kuang-sheng, K'ang Teh-jen and Ch'en Kuei-jung, Department of Pathological Anatomy, Kirin Medical University; in the Chinese language periodical Chung-hua I-hsueh Tsa-chih (Chinese Journal of Medicine), Peiping, Vol 49, No 2, 1963, pp 112-114.]

After analyzing the mechanism of development of its pathological changes, it was our belief that K'e-shan disease was probably caused by a certain toxic substance that acted on the heart, especially in affecting the coronary circulation and hindering the nourishment of the myocardium; or, due to the lack of a certain specific nutritive substance. In conjunction with epidemiological data on this disease, we further believed that the cause probably existed in the soil and water of the affected areas and that it was a disease induced by an abnormality constituted by terrestrial chemistry.

Complete and detailed data on the terrestrial chemistry characteristic of the affected areas are still lacking. Results of analysis on three affected areas and one unaffected area by the Division of Chemical Analysis, Changchun Institute of Geology, using the Kuang-p'u Pan quantitative method, showed that the barium content in one affected area was over 10%, and in the other two 1-10%; whereas no barium was found in the unaffected area. Hence, excess barium present in the soil or water attracted our attention. Studies on chronic barium poisoning were then carried out. This article presents a preliminary discussion of the etiology of K'e-shan disease from the bioterrachemical aspect in conjunction with the experimental results.

Experiment on Chronic Barium Poisoning

I. Method: Eighty-eight rats (no sex restriction) weighing 40-130 gm each were divided into two groups, 51 in the test group and 37 in the control group. In the test group, barium chloride 1-2% aqueous solution was infused into each animal through oral intubation once daily with a dosage of about 200-400 mg per kilogram body weight per day. The experiments were carried out in two seasons, from March to May and from November to January. Each test lasted for 15-60 days.

The animals were kept in the laboratory animal house of the university, room temperature 14-20°C, and fed with regular feed (mixed flour with portions of green vegetable or carrot added) and Changchun municipal tap water. The test rats and the control rats were divided into groups according to their body weight and sex. They were kept in the same cage to have entirely the same living conditions. To avoid effects from injuries caused by intubations, a portion of the control rats was infused with distilled water through the intubation. After the animals were killed, histological studies were carried out in all with the heart as the key organ.

II. Results:

1. Test group: Of the 51 rats, only 15 showed changes in the myocardium, mainly in the form of liquefaction and coagulation necrosis accompanied by varied degrees of interstitial myocarditis cell reactions and afterward cicatrizations, etc. The liquefactions were mostly focal. Vacuoles of varied sizes appeared in the sarcoplasm, or the whole section of muscle fibres became an empty shell with absolutely no staining property (diagram 1) [diagrams not available with this translation]. Most of the reticular frameworks were preserved, but some contracted and collapsed; the openings became smaller and the structure denser. The nuclei shrank in size, pale-stained, eccentrically located or disappeared. There were usually no apparent inflammatory reactions where the lesions were located. These changes were present in seven of the 15 rats.

The coagulation necrosis were either focal or joined and spread out under the endocardium. The longitudinal and transverse striae of the muscles disappeared in these areas; sarcoplasm collected unevenly and without structure. Some necrotic muscle fibers atrophied and became thinner; some

broke up into masses of varied sizes and uneven forms; nuclei usually concentrated, liquified or disappeared completely (diagram 2).

Locally, there often were abundant inflammatory cell reactions, mainly of mononuclear macrophagocytes and occasionally a few neutrophil granulocytes. In individual cases of severe subendocardial necrosis of the myocardium, neutrophils were present locally in great abundance and appeared like fresh infarctions. These changes were found in only seven of the 15 rats.

Some scars appeared like small star-like rays, flakes and masses, some like irregular strips of rope. Age of the scars varied but were generally comparatively fresh. Collagenous fibrils were comparatively few and thin; fibroblasts few in number and usually without any apparent inflammatory reactions. Occasionally, phenomena of hypertrophy were seen in individual myocardial fibers adjacent to the scars. These changes were present in five of the 15 rats.

Lesions were generally distributed more heavily in the left ventricle followed in order by the left side of the ventricular septum and right ventricle, whereas scattered myocardial necrosis and inflammatory reactions in auricles were seen only in the few rats with more severe changes. In the various layers of the heart wall, lesions were most prominently distributed in the papillary muscles, columna carneae, and the inner layer of myocardium (diagrams 3, 4). There were few in the middle layer and apparently no changes were seen in the outer layer.

2. Control group: Not all of the 37 rats in the control group manifested physical destruction of myocardium as in the test group stated above. Pericarditis, mainly in the auricular areas; mild degrees of interstitial myocarditis, and granulomas were seen in only a few cases.

Major manifestations of pericarditis were the presence of diffused monocytic, lymphocytic and filamented neutrophilic infiltrations in the fatty tissue of the pericardium; some also with an abundance of acidophilic granulocytes. In the myocardium next to the pericardium, interstitial inflammations of varied degrees may be seen but without apparent destruction of the muscle fibers. Granulomas may be seen in the middle and outer layers of the interstitial myocardium, the monocytes were relatively large and some appeared like fibroblasts. Lesions were very small and localized.

To sum up, changes in the control rats were principally of interstitial inflammation with no apparent physical changes in the myocardium. It was a type of myocarditis involving mainly the interstitial tissue that existed originally in the rats. This type of change was also present in a portion of rats in the test group, but was not listed in the statistics.

From the above observations, it may be assumed that those changes, principally physical myocardial in nature, in the test animals were of definite characteristics and were apparently caused by chronic barium poisoning.

In addition to the myocardium, the major viscera, liver, spleen, kidneys and lungs were also examined. No pathology of any pattern was present in the test animals and they were apparently not different from the control. Also, no signs of nervous paralysis occurred in the test rats.

#### Discussion

##### I. Bioterrachemistry and "K'e-shan" disease:

At present, there are three major theories on the etiology of K'e-shan disease: namely the biological factor or natural cause theory, the poisoning theory, and the nutritional deficiency theory.

In the poisoning theory, there are inorganic and organic poisonings. We analyzed the etiology of K'e-shan disease from the angle of morphological development and believe that the disease is probably a type of inorganic poisoning due to an abnormality constituted by terrestrial chemistry, or caused by the deficiency of a certain specific substance. Some suggested that this disease might be caused by organic poison produced by certain plants. If this is so, distribution of these plants should then determine the distribution of this disease. It must be proved first that these plants exist in the affected areas and that none or few are present in the unaffected areas.

Seen from the natural distribution of plants, in smaller districts similar in all natural conditions, this disease, nevertheless, occurred focally, a point that was difficult to understand. Let us assume that a certain or several plants, although widely distributed geographically, grew in the affected areas and contained chemical constituents different from those of the unaffected areas. Assume

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further that the chemically constituted abnormality is accordingly the cause of K'e-shan disease. Then, this kind of plant poison would be only a reflection of the chemically constituted abnormality of the soil and water in the plants. Eventually, the terrachemical characteristics of the area would still have to be studied.

Seen from morphological development, the probability of the deficiency of a certain nutrient as the cause of K'e-shan disease existed. Clinical and pathological data have already proved that K'e-shan disease is not a generalized nutritional deficiency but probably a deficiency of a certain specific element essential to myocardium metabolism. Another possibility is that it is caused by an excess of a certain element that interferes with the metabolic process. This could subsequently result in a deficiency of certain nutrients and cause the disease. Regardless of the probabilities, it would be significant, we believe, to start the studies from the terrachemical aspect.

The natural cuase theory was obtained chiefly from the epidemiological data. It was believed that this disease was characteristically endemic, seasonal, focally distributed, with "undulating outbreaks," etc., and corresponded to the general pattern of diseases of natural causes. However after these epidemiological characteristics were analyzed, it was our belief that the epidemiological data not only did not contradict the bioterrachemical theory, but also offered much support.

Take endemic goiter, for instance. According to etiological classification it should be grouped under terrachemical diseases because most of them occur in areas with iodine deficiencies in the soil and water. According to epidemiological data, it was not difficult to see that the characteristics of endemic goiter are fundamentally the same as those of K'e-shan disease which also is endemic, focally distributed and seasonal (mostly in the winter and spring seasons). The "undulating outbreaks" of K'e-shan disease are, at present, still in dispute. There is a definite variation in the incidence each year. Although this disease occurs every year, there may be great differences among the yearly incidences. During certain years outbreaks often start abruptly. These phenomena also exist in endemic goiter. Therefore, it was evident that the endemic and focal distributions, as well as the so-called undulating outbreaks etc., were all phenomena not specific to diseases of natural causes alone but also observable in terrachemical diseases.

## II. Chronic barium poisoning and K'e-shan disease:

The mechanism of barium action has not as yet been sufficiently studied. Material on hand shows that it is a type of muscle poison that acts on all myocardium, skeletal muscles and smooth muscles. Some have proved that barium has a specific action on visceral blood vessels causing their contraction by direct action on the smooth muscles of the artery wall. They have demonstrated also that barium chloride injected intravenously may induce an apparent decrease in coronary circulation. Some used barium as an agent that effectively reduced coronary circulation to create anoxemia of the myocardium. Others suggest that barium causes a disturbance in potassium metabolism and creates hypopotassemia.

The action mechanism of barium on the heart and blood vessels stated above corresponds somewhat with the development of changes in the heart in K'e-shan disease. The development of changes in the heart in K'e-shan disease is closely related to insufficiency of coronary circulation. The major action of barium also manifests itself in the myocardium and the muscular layer of blood vessels inducing an insufficiency of coronary circulation and creating anoxemia of the myocardium.

Barium can also create a deficiency in potassium. Potassium deficiency itself can cause a necrosis of the myocardium and striated muscles. In K'e-shan disease, some have already shown that, in addition to myocardium, similar changes of a milder degree may also occur in other striated muscles.

It must be mentioned that in addition to its action on the muscles, barium also has a definite effect on the central nervous system and may induce paralysis, especially during the late stage of acute poisoning from large quantities. The paralytic disease seen in the southwest districts of China are results of acute barium poisonings. In patients with K'e-shan disease, no signs of nervous paralysis had ever occurred. This seemed to be a point of contradiction. However, seen from the mechanism of morphological development, K'e-shan disease seemed not to be an acute poisoning but a chronic poisoning of long duration. Also, according to the general reactions and pathology of the heart, the action was not intensely toxic. From this it was presumed that the barium intake was below the amount for acute poisoning and not sufficient to cause nervous paralysis.

Our animal experimentation also showed that apparent myocardial changes may occur when barium of dosages insufficient to cause paralysis are given in an extended period of time. In regard to the occurrence of sudden attacks in cases with severe myocardial injuries, various predisposing factors must be taken into consideration as well as the effects of the basic causes. The various known factors such as cold, carbon monoxide, nervous stimulation, exertion, etc., have the same action mechanisms as barium on the heart, and so may supplementarily and complimentarily intensify myocardial damage. Therefore, in the development of K'e-shan disease, many factors should be considered, especially the effects of cold and carbon monoxide.

There was relatively little data on the pathology of barium poisoning and most experiments were on acute poisonings. The chronic barium poisoning experiment we carried out showed that about one third of the animals developed changes similar to K'e-shan disease in the myocardium. Pathologically, it was principally myocardial destruction accompanied by varied degrees of interstitial inflammatory reaction. Distribution of the changes showed that the left ventricle and the left side of the ventricular septum were more severely damaged and the lesions were mostly concentrated in the papillary muscles, columnae carneae and inner layer of the myocardium. These changes were similar to those caused by chronic insufficiency of coronary circulation in both pathology and distribution. They were somewhat similar to the myocardial changes in K'e-shan disease. In chronic barium poisoning, although apparent changes were produced in the heart, no apparent changes were present in other viscera, a point which also was similar to K'e-shan disease.

In summarizing, research on the etiology of K'e-shan disease, viewed from either the mechanism of pathological development or epidemiological characteristics, should be started from the bioterrachemical point of view. Complete detailed terrachemical survey of the affected areas must be carried out so that clues on possible causes may be found. We have done very little in this area. Much more work is needed to solve the problem on etiology. As to chronic barium poisoning being the cause of K'e-shan disease, from preliminary data on hand, we believe that serious study should be given to an investigation of the subject. At present we do not consider barium the only possible factor. We shall give much attention to the excess or deficiency of any element in the affected areas.

Conclusion

I. Viewed from the epidemiology and the mechanism of pathological development, we believe that research on the etiology of K'e-shan disease should begin with a bioterrachemical approach. The excess or deficiency of certain elements in the soil and water in the affected areas should both be noted.

II. Viewed from the mechanism of action of barium, and the results of animal experimentation, as well as data on preliminary chemical examinations of the soil and water of the affected areas, chronic barium poisoning could be the cause of K'e-shan disease and is worthy of further intensive study.

(CONFIDENTIAL)

## EXPERIMENTAL OBSERVATIONS ON THE DIAGNOSIS OF PLEURITIS BY ULTRASONIC WAVES

[Following is a translation of an article by Hsieh Pao-tien, Ke Ch'ing, Tu Pen-ye, Lin Li-hua and Chang Yu-wei, Division of Supersonic-Wave Diagnosis, Peiping Institute of Tuberculosis Research; in the Chinese-language periodical Chung-hua I-hsueh Tsa-chih (Chinese Journal of Medicine), Peiping, Vol 49, No 2, 1963, p 121.]

To further understand the transmission of ultrasonic waves in normal and pathologic tissues of the chest and to theoretically investigate and explain the wave types, we have carried out acoustic determinations in animals, in the normal human body, and in tuberculous changes.

I. From the sound velocity (transmission) determinations of several normal and pathologic tissues, impedance was calculated. A reflecting surface was installed at a fixed distance of 1.5 mm; 25°C water was used as standard in determining the distance between the starting and end waves of the ultrasonic waves shown in the various types of tissues. Results obtained according to formula are listed in the table.

The velocity transmissions of biologic and pathologic tissues, as well as pus and exudates, etc., were alike. However, the differences in air and other tissues were comparatively bigger. When various matters were joined to form a boundary surface, the reflection coefficient of fluid, tissue, and air was found to be higher. This indicated that the ultrasonic waves were almost all reflected and not passing through. However, ultrasonic waves could pass through the boundary surface formed by other biologic and pathologic tissues.

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Table Acoustic properties of normal and pathologic tissues

Property	Muscle	Pleura (thickened)	Fibrosis	Caseation	Liver	Pus	Exudate	Water	Air
Velocity (C) m/sec	1590	1572	1545	1497	1572	1500	1497	1497	344
Density (ρ) gm./cubic mm.	1.035	1.060	1.055	1.080	1.078	1.020	1.002	1.000	$1.2 \times 10^{-2}$
Impedance (P.C.) (R)	1646	1666	1630	1617	1695	1530	1500	1497	0.413

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II. Observations on the types of waves:

1. Pleural tissue and fluid: Pleural callosity in water manifested small waves measuring 2 mm and produced surface reflecting waves.

2. Comparing determinations made in water on pleural callosity and fibrous lung showed that the reflected waves of water and fibrous lung was higher than the former.

3. In the determination of caseous lung in water, reflected waves were repeatedly obtained when normal lung tissue was tested. Pathologic reflected waves were obtained when the pathologic tissue was tested.

In addition, comparisons of wave forms obtained from fluid of varied density (meaning copper sulfate solution, sp. gr. 1.005-1.900) and blood with pus showed no significant differences.

III. Experiments using surgery, cadavers and animals:

Determinations were made in the organs in seven chest surgery and four abdominal surgery cases, as well as in opened chests of three cadavers, and eight tests made on animals. Reflected waves were obtained in all when ultrasonic tests were made on the soft part of the tissues such as the chest wall, pleura, heart, liver and spleen. Wave distances corresponded with the anatomy. Lung tissue could reflect the ultra sound and was not easily penetrated. Direct test on the lungs showed no manifestation of wave forms.

Ultrasonic detection of fluid accumulated in the chest cavity was comparatively more sensitive. In the experiment, 5 ml of fluid was injected into the chest cavity of animals. Waves of varied forms appeared in accordance with the amount of fluid present. The location and amount of fluid in the chest could be demonstrated both in the wave forms and the distance between the waves.

The above observations showed that different wave forms may be produced by various biologic and pathologic tissues according to their different properties. Ultrasonic waves can easily penetrate soft tissues, body fluids, and pathologic tissues with no difference among fluids of different properties. Ultrasonic waves do not penetrate easily through lung tissues because of the presence of air in comparatively

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large amounts. The diagnosing of lung diseases is limited. However, if pathologic changes are close to the surface of the lungs, waves can still be produced and further observations and research would be necessary. (This article was written by Hsieh Pao-yu and Lin Li-hua).

(Article received on 16 August 1962)

(CONFIDENTIAL)

## A PRACTICAL AND SIMPLIFIED METHOD FOR ESTIMATING MEDIAN LETHAL DOSE EFFICACY

[Following is a translation of a selected portion of an article by Sun Jui-yuan, Department of Pharmacology and Wu Min-yu, Department of Microbiology, Wuhu Medical College Special School; in the Chinese language periodical Chung-hua I-hsueh Tsa-chih (Chinese Journal of Medicine), Peiping, Vol 49, No 2, 1963, p 122.]

In the determinations of pathogenicity and neutralization index of viruses, the median lethal efficacy was usually estimated by the Reed-Muench's method. Actually, the method is not precise enough and, in 1956, E. A. Zamoiskii pointed out that estimation with accumulated deaths by this method was disobeying the principle of "sample according to circumstances" in statistics and was constitutionally wrong. However, because of its apparently simple principle and convenience in estimation, it is still the choice of virologists.

Among the various methods for median lethal dose estimation, Kaerber's is acutally superior to Reed-Muench's method in accuracy and also adaptable in estimating the median lethal efficacy in virology. Because of its relatively complex formula, the method has never been emphasized.

The relation between median lethal efficacy and median lethal dose is  $K_{50} = -\log LD_{50}$  with the following characteristics in virological experiments:

- I. Numbers of animals in the various groups are the same, about 4-10 heads.
- II. Tenfold dilutions are used in all groups, that is, group ratios are all 1:0.1. Because of the high ratio, a 100%

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and 0% lethal rate occur easily. Even when nothing occurs, something generally happens at the next dilution. Possibilities of exceptions are very small.

Based on above characteristics, Kaerber's method is herewith simplified and improved. A very short and considerably accurate formula for estimating median lethal efficacy is proposed as follows:

$$K_{50} = K_m - 0.5 + \frac{\sum r}{n}$$

where  $K_{50}$  is median lethal efficacy,  $K_m$  is the maximum lethal efficacy,  $\sum r$  is the summation of deaths in various groups, and  $n$  is the number of animals of each group.

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— See also *Government of India Act, 1935*, section 253.

## A QUICK METHOD FOR ESTIMATING MINUTE AMOUNTS

## OF LIVE BACTERIA IN FOOD

Indjel [Following is a translation of selected portions given  
of an article by Hao Shih-hai, Ch'en Chun-shih  
and Chou Kuei-lien, Department of Nutrition,  
Chinese Academy of Medical Sciences; in the  
Chinese language periodical Chung-hua I-hsueh  
Tsa-chih (Chinese Journal of Medicine), Peiping,  
Vol 49, No 2, 1963, pp 126, 128.]

In public health management, the employment of bacteria count as an evaluation of the health standards of various foods, drinks and drinking water has been practiced for several tens of years throughout the world. Methods for bacteria estimation have been studied by many and a great deal of material accumulated. In addition to studies on culture temperature, time, media and technical errors, etc., methods suggested include the following: 1. direct smear count under microscope; 2. revolving agar tube culture method; 3. agar poured flat utensil culture method (abbr. flat utensil method); and 4. minute amount quick culture estimation (abbr. slide method).

In the first method, estimations include the dead bacteria. Errors are relatively big. Except for a few special purposes, it is generally little used. The second method is technically not easily mastered. Furthermore, the results are not very reliable and it is now hardly ever used. The third is, at present, a most universally employed method. Its main disadvantage is the need for large amounts of flat glass utensils and agar culture medium. Furthermore, the time for cultivation is relatively long, generally requiring 48 hours. This frequently is not practical.

Although the fourth was introduced by Frost as early as 1916, Nickersen (1943), Estabrooks et al (1953) again improved the method and employed it for the bacterial count of frozen vegetables with very good results. However, it

is not emphasized because very little has been reported on it.

China is a vast land with health organizations established throughout the country and greatly advanced in accordance with production. Samples to be examined daily are overburdening. If the flat utensil method could be changed to a slide method, it would be a tremendous saving of China's wealth. Hence, experiments directed toward improvement have been carried out. The methods reported on by the above authors plus their preliminary results indicate it may yet be extensively employed. Below is a report to be used as a reference.

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(Article received on 8 August 1962)

(CONFIDENTIAL)

### A PROBLEM WORTHY OF ATTENTION

[Following is a translation of an article by Wen Chieh in the Chinese language periodical Chung-hua I-hsueh Tsa-chih (Chinese Journal of Medicine), Peiping, Vol 59, No 2, 1963, p 123.]

The articles "Dysentery bacillus types and their sensitivities to drugs and phagocytes" (Chinese Journal of Medicine, Vol 47, No 2, p 74, 1961) by the Department of Microbiology, Peiping Sino-Soviet Friendship Hospital Research Division; and "Analysis of pathogenic bacteria and their drug tolerance in 824 cases of bacillary dysentery" (Chinese Journal of Internal Medicine, Vol 10, No 6, p 377, 1962) both referred to the change in dysentery bacillus types in the Peiping area. They also mentioned, that, during recent years, serum variants of *S. flexneri* and *S. shigella* appeared with higher frequency among bacillary dysentery patients in the Peiping area.

For example, data from the Sino-Soviet Friendship Hospital showed that not one strain of *S. flexneri* type 2<sub>a</sub> or 3, both frequently seen in the past, was found among the 322 strains of *B. dysentery*, whereas a total of 64 strains (19.88% of the total) of *S. flexneri* y variant were found.

The antigen structures of 19 strains among them were I:34(-), 6(+), 7(+). Similar results were also presented in the second article. For example, among the 130 strains of *S. flexneri* serum variants discovered, 56 were I:6, 7..... and 19 were I:6..... variants. In accord with these results, the following opinions are proposed for consideration.

The loss and variations of type antigens in *S. flexneri* and *shigella* are well known among bacteriologists. Because of loss of their type antigens, these strains of bacterial

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finally became variants with group antigens only. However, for practical reasons, scientists assume certain strains have lost their type antigens and have become variants with group antigen only -- especially when these variants appear frequently in experimental results that do not agree with past reports. Experimental results should be reexamined repeatedly and diagnostic serum checked.

Major problems in producing S. flexneri types II and III serum are that flexneri type II serum is low in efficacy and not stable. Moreover, type III serum is good in agglutination efficacy with standard strains but weak or not agglutinating with certain strains of flexneri type III isolated clinically. These situations remind us that if we, in our daily examinations, use sera that are alike, it is possible to mistake flexneri 2 variant as flexneri 2a; I:6, 7..... variant as flexneri 3a; and I:6..... variant as flexneri 3c.

The purpose of mentioning these situations is to call to the attention of all scientists the epidemiological statistics of dysentery, because material on the distribution of B. dysentery types concerns them, in addition to its use as a clinical reference. Hence, on one hand, we should request that further studies be undertaken by the department that manufactures the diagnostic serum to improve quality. On the other hand, for purpose of caution, when a frequently seen variant is encountered by the various units, it is my opinion that sending representative strains of this bacteria to a nearby better equipped unit for reexamination and identification is necessary to make our data more accurate.

( CONFIDENTIAL )

### NON-ICTERIC LEPTOSPIROSIS

[Following is a translation of an article by Ts'ao Chung-liang, Szechwan Medical College; in the Chinese language periodical Chung-hua I-hsueh Tsa-chih (Chinese Journal of Medicine), Peiping, Vol 49, No 2, 1963, pp 134-136.]

#### General Situations and Epidemiological Factors

Leptospirosis is an acute infectious disease caused by several types of pathogenic leptospira. Clinically and epidemiologically this disease is divided mainly into icteric and non-icteric types. In epidemiology, the icteric type is also the Weil-Vasilbev's disease. Actually, jaundice is present in only about 50% of the patients; the rest are mild cases without jaundice. The non-icteric type is epidemiologically also the so-called "seven-day fever," "pond fever," "mud fever," "summer flu," and "rice plague"; generally mild with a mortality rate of 1% or lower.

In an outbreak of the non-icteric type, individual cases with mild jaundice may also occur. It is worthy of note that in the non-icteric leptospirosis seen during recent years in certain districts in southern China, serious extensive hemorrhages into the lungs occurred in a few patients from the same districts in different years. Some patients died of suffocation and exhaustion. Reports on similar types of clinical crisis in leptospirosis, especially during outbreaks of the non-icteric type, have not yet appeared in China or elsewhere. However, all of the non-icteric cases that died of extensive lung hemorrhages during the outbreaks had, to our knowledge, no apparent jaundice. Hence, clinically non-icteric leptospirosis may be divided into three groups as follows:

- I. Non-icteric type in outbreaks of the icteric type (mild type);

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II. Non-icteric type in general during outbreaks of the non-icteric type; and

III. Extensive pulmonary hemorrhage type in outbreaks of non-icteric type.

More than forty types of etiologic agent have been found throughout the world. The presence of jaundice and the severity of the disease may, if viewed from the pathologic physiological and pathologic anatomical angles, depend on the reactions of different organisms. However, based on preliminary results of our epidemiological surveys of the past two years, icteric type and non-icteric type occurred regularly each in certain districts, and in different districts during different years, the two types may appear alternately.

These facts cannot be entirely explained by the organic reactions of different patients. Therefore, it was our preliminary belief that in addition to the recognized factor of different organic reactions, the presence of jaundice and the extensiveness of pulmonary hemorrhage may possibly be related to definite characteristics of the etiologic agent, or to the presence of other supplementary factors. In these aspects, we are prepared to do more research on the identification of types of etiologic agents and to perform an epidemiological survey.

Leptospirosis is essentially a disease of natural origin. Although swine, dogs, goats, cattle, cats, and certain wild animals may be the origin of this disease, the infection is passed mainly through the urine of infected house or wild rats. Urine of infected animals contains large numbers of leptospira and when men work with bare feet and hands in field-water or other accumulations of water contaminated by the urine, leptospira may pass through the skin and cause infection in the human body. Therefore, in epidemic areas when rice is ready for harvest and before the field is dry, water in the field is seriously contaminated by infected rat colonies that lived in the rice field.

If no precaution is taken, outbreaks of leptospirosis among the rice-field workers will result. This disease may occur during any season of the year in the epidemic areas, but the outbreaks usually follow the rice harvest seasons. Pollution of the water accumulated in the mining holes may cause outbreaks among the mine workers. Infections among fishermen, slaughterers or sewer workers are, according to our experiences, relatively few.

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According to reports, this disease may also take place if a man accidentally ingests improperly stored food or drinks contaminated by rat urine. Our data already show that an infected pregnant woman may pass the disease to the fetus through the placenta. If a nursing mother were infected, leptospira might also be found in the milk. Leptospira may also be found in the urine of patients within a certain period of time. Clinically, however, direct transmission of the disease from patient to patient is very uncommon.

Mechanism of Development and Pathologic Changes

Leptospirosis is an acute septicemia. The severity and prognosis of the disease are very much related to the severity of toxemia, jaundice and hemorrhage. The severe toxemia in this disease manifests itself in two different ways: one is the easily noticed type of "high fever strongly reactive toxicosis"; the other is "low fever weakly reactive toxicosis." The patient usually has a low fever, his face appears bluish gray and pale, pulse rapid and weak or small and feeble. He generally can be compelled to move about and continue working.

The latter type case is very easily neglected and, at different times of the course (more common during early and middle stages), may rapidly enter into the suffocation and exhaustion state of extensive pulmonary hemorrhage. The presence and severity of jaundice evidently are related to the liver tissue and the degree of its functional damage.

Whether jaundice is due also to the hemolytic action in this disease has not as yet been definitely concluded. Hemorrhages are mainly due to extensive damage to the capillaries, especially those in the skin, mucosa, liver, kidneys, lungs, myocardium, skeletal muscles and lymph nodes. Viewed from some of our experimental data, this damage is definitely related to the toxicity of leptospira. However, whether the damage is caused by special toxin has not been sufficiently demonstrated. Serial section and typical animal tests on the primary site of pulmonary hemorrhage in non-icteric types of patients seen in certain districts preliminarily show it to be due mainly to capillary damage and that precapillaries may also be involved. A combination of degeneration of vessel walls and vascular congestion causes extensive hemorrhages in the lungs.

As to the relation between dynamic changes in heart-lung circulation and extensive hemorrhages, it is, at present, not

very clear. Our pathologic anatomy also shows that hemorrhagic lesions in lungs do not involve the bronchi in the early stage. They are distributed mainly under the pulmonary pleura and alveoli. During the late stage, hemorrhages may also occur in the bronchial submucosa. However, these are not the major causes of extensive pulmonary hemorrhages.

Secondly, the hemorrhagic lesions present a multiplying or gradual approaching mode of expansion, namely in the forms of direct expansion or blending of focal lesions. They may also extend along the bronchi in the late stage. As to the agglutination factor, serious destruction of liver tissue and function, together with other factors in cases with marked jaundice, may directly affect the mechanism of agglutination. This increases the hemorrhagic tendency.

In cases of extensive pulmonary hemorrhage of the non-icteric type, although slight changes in the mechanisms of hemorrhaging and agglutination have been demonstrated, in view of the unfavorable clinical reactions toward the many forms of antihemorrhagic therapy, they seem not to be the major factors.

In the icteric type, changes in kidney function are generally closely related to changes in liver tissue and function. In the non-icteric type, changes in the liver are very mild. Those in the kidneys are also mild.

Among the cases we have seen that died, none of the deaths was apparently due to kidney function failure or uremia. Neurological changes and clinical manifestations were not uncommon in the non-icteric type (3.6% of our cases). However, prognosis was good and after effects uncommon.

#### Clinical Manifestations

It was reported in the literature that the latent period was 4-9 or 3-21 days. In our cases, it generally was within 6-11 days. The onset, in the great majority of cases, inclined to be sudden. Prominent symptoms and signs were: chilliness; high fever; headache; and the comparatively more apparent general aching, especially pain and tenderness in the gastrocnemius of lower extremities that disabled the patient, a sign very evident in most of the cases. The face appeared flushed and conjunctiva apparently congested. Lymph nodes, especially those in the inguinal region, showed various degrees of enlargement and tenderness on one or both

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with very little redness or swelling. Ulcerations and ruptures never occurred. There were also epistaxis, cough and blood streaked sputum, or hemoptysis.

In a few of the severe cases, high fever toxicosis may occur within 2-5 days of the illness. Although some cases do not have high temperature, their faces appear bluish gray and pale, with palpitation and shortness of breath. They become harassed and uneasy, frightened and afraid of death; pulse weak, small and rapid; dyspneic; cyanotic with rapidly increased rales in lungs; then, gradually comatous or after coughing up large amounts of blood sputum, patients die of suffocation or exhaustion.

In individual cases with no or no significant blood sputum while alive, large amounts of bloody sputum may gush forth after death when the bodies are moved.

Chest X-ray plates and autopsy both reveal extensive pulmonary infiltrations or hemorrhages. These patients manifest no apparent congestive heart failure clinically and the corresponding life-saving treatment rarely produces satisfactory results. The disease usually lasts for 5-9 days and, as an average, temperature becomes normal on about the seventh day with rapid improvement of symptoms.

Sometimes the temperature rises again to  $38^{\circ}\text{C}$  or even higher 2-5 days after it becomes normal. However, few other symptoms or serious complications appear, and temperature again returns to normal in 2-3 days.

Diagnosis

It is relatively easy to diagnose typical cases of leptospirosis of the non-icteric type. In non-typical cases, decision should be made in close conjunction with epidemiological and examination data. Epidemiologically, it generally is necessary to find out if the patient has participated in rice harvesting or other labor through which the patient might come into contact with polluted water during the season and in the districts of outbreaks 3-20 days before the onset.

History on other occupations in which one might come into contact with infected water should also be inquired into. In addition, in districts of water-fields, floods, or accumulations of water in mining holes, if an outbreak of "influenza-like" occurred, the possibility of non-icteric leptospirosis should especially be considered.

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Examination shows that white cell count tends to be high (10,000-15,000 per cubic mm), polynuclear and rod neutrophils relatively more numerous (over 80%) while the sedimentation rate is also relatively fast. Urine shows changes of mild kidney pathology. Liver function may also be abnormal occasionally.

Although these changes are not always specific, they may be of significance when considered in conjunction with clinical and epidemiological data. However, for accurate diagnosis of non-icteric leptospirosis, etiological and serological evidences must be investigated. A 30-40% positive reaction may be obtained from the early-stage (within 5 days) blood culture (1-2 drops of fresh blood inoculated in 5 ml of potassium phosphate buffer solution containing 10% rabbit serum) or by inoculation of blood into guinea pigs weighing 200 gm (whole blood 2.5 ml intraperitoneally) within 1-3 weeks. Urine or the cerebrospinal fluid in cases with encephalitis and meningitis manifestations during the middle and late stages may also be cultured and inoculated after management.

In 1-3 weeks after the onset, about 80% of the patients showed positive agglutinating lytic and complement-fixation reactions. During the initial stage of the disease, the sensitivity and positive rate of hemolysis were both relatively high (70-80%). Although this was not a specific test, it was simple to perform. The diagnostic value of antigen determination of urine in the initial stage is still in the investigation stage. Direct smear stained or dark-field examination for leptospira in urine and cerebrospinal fluid produced a low positive rate. However, under certain conditions, it may be helpful in early diagnosis. In areas and during seasons of outbreak, examinations of urine, liver and kidney tissues by direct smears, dark field or culture inoculations of rats captured can be of great significance in epidemiological decisions. Leptospira was typed mainly to supply the data necessary for epidemiological research and vaccine manufacture.

Treatment

Treatment of non-icteric leptospirosis is the same as any other acute epidemic infection with special emphasis on early detection, early diagnosis and early treatment. To effectively prevent sudden worsening of the conditions, immediate bed rest strictly carried out during the early stage is significant, especially in low fever toxicosis cases.

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A quiet and comfortable environment, properly managed diet and supplementary fluid (careful that too much intravenous-drip fluid is not given), as well as detailed symptomatic treatment are all very important.

Our experience repeatedly showed that penicillin has a relatively good effect in non-icteric leptospirosis. Whether patients were treated early or late, temperature generally returned to normal within 24-48 hours and symptoms were alleviated. Some patients might again show a rise in temperature for a short duration (1-2 days) soon after it was lowered, but the prognosis was still good.

The suitable dosage of penicillin was 800-1200 thousand units daily, maintained for 3-5 days after fever subsided. In cases of severe toxicosis of either the high or low fever type, relatively quick alleviation may be obtained by intravenous drip of dehydrocortisone 50-100 mgm in 200 ml 5% glucose solution.

Early diagnosis and early treatment, especially bed rest strictly maintained early in the disease, are imperative in preventing the occurrence of extensive hemorrhages in the lungs. If a patient is delayed in obtaining early treatment or becomes continuously worse, sedatives should be immediately enforced on top of the treatment mentioned above by giving doriden 50-100 mgm intramuscularly or through intravenous drip.

Should the patient become very harassed, frightened or restless, morphine 10-15 mgm may be given with caution subcutaneously or intravenously. It was our observation that marked restlessness was an early indication of extensive pulmonary hemorrhage and was also one of the major factors that further augmented the hemorrhages. It should, therefore, be positively managed. In addition, patients may also be given intravenous or intramuscular injections of antileptospira horse serum or convalescence serum 40-60 ml 1-2 times a day for 2-3 days, or, discontinued after temperature returns to normal and symptoms are alleviated.

If signs of congestive heart failure are present, intravenous injection of dedilanid 0.8 mgm or K-Strophanthin 0.125 mgm may also be employed and repeated after 2-6 hours, if necessary.

Although venesection and tracheotomy may be tried when necessary, results are generally not good. In cases of

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extensive pulmonary hemorrhage accompanied by exhaustion, demethylepinephrin or posterior pituitrin by intravenous drip does not generally produce good effects. It may produce occasional unfavorable reactions. When such drugs are employed, it must be with special caution and immediately discontinued if apparent unfavorable reactions occur. Sufficient experience is still lacking in ways of preventing and managing extensive pulmonary hemorrhages. We still stress that strictly carried out early bed rest is very essential.

Prevention

To prevent leptospirosis, the following combined measures should be seriously considered:

- I. Extinguish the etiologic agent: Extensive propaganda and motivation of the mass to exterminate rats, and with all effort to prevent pollution of water sources by fresh feces of large domestic animals.
- II. Intersect the route of transmission: In epidemic areas, if conditions permit, every effort should be made to drain the water in the fields two weeks before the rice harvest. This facilitates harvesting as well as reduces the chance of infection of the field laborers. If the muddy fields cannot be drained, suitable amounts of chemical fertilizer may be used according to local conditions to kill the leptospiral before the harvest.
- III. Vaccination: If the vaccine is properly selected and prepared it may, according to our experiences, be given to susceptible people, each receiving two subcutaneous injections every other week one month before the outbreak of the disease each year.

(Article received on 2 June  
1962)  
(CONFIDENTIAL)

ACUTE MERCURIAL POISONING DUE TO ACCIDENTAL  
INGESTION OF CERESAN

[Following is a translation of an article by Liu I-jen, Hsiang-fan Shin Epidemiological Station; in the Chinese language periodical Chung-hua I-hsueh Tsa-chih (Chinese Journal of Medicine), Peiping, Vol 49, No 2, 1963, p 136.]

History of the poisoning: Two boats that belonged to a certain bureau of communications were transporting Chin-chung agricultural drugs and soda. On 23 July, cooks on both boats used "soda" for yeast to make steamed bread. Nineteen persons had their meals at 11:30 a.m. and about 30 minutes later, individual persons began to experience upper abdominal discomfort, fever, dizziness, headache, nausea, vomiting, and restlessness, etc. Within six hours, all 19 persons developed the above symptoms. No special food had been taken 1-2 days before the onset.

Clinical analysis: Analysis was made on the 18 hospitalized cases.

I. Sex and age: Male 17 cases, female 1. Except for two cases aged five and eight, the rest were all adults 21-40 years of age.

II. Symptoms and signs: The earliest symptoms were upper abdominal discomfort and fever (17 cases), followed by nausea and vomiting (18 and 14 cases). Thirteen of the cases had slight abdominal pain; abdominal distension occurred in six; diarrhea in four; and generalized aching in six cases.

Weakness of extremities and backache were present in half of the cases; dizziness, 12 cases; headache of a mild degree, five cases; and still another three cases had

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increased salivary secretion. Sixteen of the cases had a rise in body temperature of about  $38^{\circ}\text{C}$ . Examinations showed congestion of conjunctiva in 11; and congestion of throat in two cases; seven cases with greatly increased intestinal gurgling; nine with abdominal tenderness; and nine with percussion tenderness over the kidney region.

III. Laboratory examination: (I) Red blood corpuscles and hemoglobin showed no changes. White cells increased in eight cases (10,100-18,600) with phenomenon of left deviation. (II) Urine albumin present in two cases. Occult blood test done on stools of 11 was positive in five cases. (III) Non-protein nitrogen tests done in 18 cases showed 16 above 35 mgm% (highest being 40 mgm%). (IV) Oxides in the highest one case was 500 mgm%; the rest were all below 500 mgm% (lowest being 410 mgm%). (V) Blood sugar determined in 10 cases was between 86-106 mgm%. Liver function tests were done in 16 cases: icteric index, van der Bergh's bilirubin, thymol turbidity, thymol flocculation, zinc turbidity, cerebroturbidity and albumin tests all showed no abnormal changes. (VI) Qualitative analysis for mercury (Reonsch's method) in both urine and blood done in two cases showed positive results (negative in control with normal subjects). (VII) The agricultural drugs carried by the two boats were identified to be a mercurial preparation "ceresan" and sodium silicofluoride ( $\text{Na}_2\text{SiF}_6$ )

IV. Treatment: Treatment for the disease was carried out after patients were hospitalized with additional employment of 2,3-dimercapto-1-propanol (BAL), dosage 2.0-2.5 mgm/kg. Simultaneous infusions were carried out in severe cases. Symptoms rapidly disappeared after treatment. Temperatures all returned to normal within 2-3 days and blood pressures were normal in two days. Backache disappeared relatively slowly. Nonprotein nitrogen and chlorides tests on 10 cases on the fourth day of treatment showed that the non-protein nitrogen in all were lowered to below 35 mgm% (lowest being 30.5 mgm%) and chlorides increased to over 500 mgm% (highest reached 560 mgm%). White cells all returned to normal within 2-3 days. The 18 cases were hospitalized for 4-7 days and discharged after recovery.

Discussion: Ceresan and sodium silicofluoride are both powerful poisons to man. The general symptoms and the digestive tract symptoms are upper abdominal discomfort, fever, nausea, vomiting, abdominal pain, etc. They all correspond with mercurial poisoning. The apparent backache, percussion tenderness over kidney regions, albuminuria,

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positive occult blood in stools, increase of blood non-protein nitrogen, etc., also all support the diagnosis of mercurial poisoning. Furthermore, mercury was detected by Reinsch's method in the blood and urine of two patients. Therefore, there was not much doubt about the diagnosis of mercurial poisoning due to accidental ingestion of ceresan in this group of patients.

(Article received on 20 October 1961)  
(CONFIDENTIAL)

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TRANSLATIONS FROM CHINESE JOURNAL OF INTERNAL MEDICINE  
(CHUNG-HUA NEI-K'E TSA-CHIH)  
Vol 11, No 5., 1963

[FOLLOWING IS THE TRANSLATION OF EXCERPTS FROM  
THE CHUNG-HUA NEI-K'E TSA-CHIH, (CHINESE JOURNAL  
OF INTERNAL MEDICINE), PEIPING, MAY 1963; VOL.  
11, NO. 5.]

RESEARCH INTO ADRENAL FUNCTION & IDENTIFICATION OF 5-HYDROXY-3-INDOLEACETIC ACID IN HYPERTHYROIDISM BY CHEN CHIA-LUN (7115 1367 0243), LO PANG-YAO (5012 6721 1031), CHANG TA-CH'ING (1728 6671 7230), WU YU-HSIN (0702 5940 3512), CHOU JEN (0719 0088), AND TING T'ING (0002 7200), OF THE INTERNAL MEDICINE TEACHING RESEARCH DIVISION OF THE KUANG-TZE HOSPITAL, SUBSIDIARY TO THE SHANGHAI SECOND MEDICAL COLLEGE; PP.342-46.

HYPERTHYROIDISM IS A SICKNESS DUE TO LACK OF HARMONY OF THE NEURO-ENDOCRINAL FUNCTION. ASIDE FROM THE CONCENTRATED MANIFESTATION OF OVER-SECRETION OF THYROTROPIN, THERE IS ALSO DISTURBANCES OF THE NEURAL AND BODY FLUID SYSTEMS. THE RESEARCH INTO THESE CHANGES IS BENEFICIAL TOWARDS THE DISCOVERY OF THE TRIGGERING MECHANISM OF THE DISEASE, ALLOWS A FURTHER UNDERSTANDING OF ITS PATHOLOGICAL PHYSIOLOGY, AND IS MEANINGFUL IN GUIDING US TOWARDS ITS TREATMENT.

THIS ARTICLE REPORTS ON THE ADRENAL FUNCTION AND 5-HYDROXY-3-INDOLEACETIC ACID SECRETION CONDITIONS OF 20 CASES OF HYPERTHYROIDISM AND NINE NORMAL PERSONS.

SUMMARY: (1) THE 17-KETOSTEROID CONTENT IN THE URINE OF HYPERTHYROID PATIENTS IS HIGHER THAN THE NORMAL PERSON. THE CONCENTRATION OF CORTI-STEROIDS IN THE BLOOD OF THESE PATIENTS IS SLIGHTLY LOWER THAN NORMAL. THROUGH ACTH STIMULATION, THE INCREASE OF 17-KETOSTEROIDS IN HYPERTHYROID PATIENTS WAS SIMILAR TO NORMAL PERSONS, WHILE THE INCREASE OF CORTI-STEROIDS IN THE BLOOD WAS LESS THAN NORMAL PERSONS. THIS EXPLAINS THAT THERE IS HASTENING OF GLYCOSTEROID METABOLISM IN THE HYPERTHYROIDIC PATIENT, OVERBURDENING THE ADRENAL CORTEX. IN THE LONG RUN THERE WILL BE A TENDENCY OF LOSING ITS STORAGE FUNCTION.

(2) IN HYPERTHYROID PATIENTS THERE IS HIGHER URINE ALDOSTERONE SECRETION THAN THE NORMAL PATIENT. THE CLINICAL MEANING AND THE MECHANISM OF ITS APPEARANCE WAS DISCUSSED.

(3) THE 17-KETOSTEROID URINE SECRETION IN THESE PATIENTS WAS SLIGHTLY HIGHER THAN NORMAL, ITS REACTION TOWARDS ACTH, HOWEVER, WAS IDENTICAL TO THAT FOR NORMAL PERSONS.

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(4) THE BLOOD AMINO-CATECHOL, URINE ADRENALIN, AND THE NORADRENALIN SECRETION, IS NOT DIFFERENT FROM NORMAL PERSONS.

(5) THE 5-HYDROXY-3-INDOLEACETIC ACID SECRETION WAS HIGHER THAN IN A NORMAL PERSON. THE MEANING OF THIS PHENOMENON WAS DISCUSSED.

REFERENCE: TING T'ING, ETC: UNPUBLISHED, URINE ALDO-STERONE DETERMINATION.

CLINICAL ANALYSIS OF 91 CASES OF HYPERTHYROIDISM By WU KUO-LIANG (0702 0948 2733), FROM THE INTERNAL MEDICINE DEPARTMENT OF THE ARMED FORCES GENERAL HOSPITAL, NANKING; pp.347-50.

THIS HOSPITAL ADMITTED AND TREATED 91 CASES OF HYPERTHYROIDISM BETWEEN THE 13 YEAR PERIOD OF JANUARY 1949 AND DECEMBER 1961. THIS REPRESENTED 0.001% OF ALL CASES ADMITTED TO THIS HOSPITAL.

SUMMARY: (1) THIS ARTICLE ANALYZES 91 CASES FROM 1949 ON, OF HYPERTHYROIDISM SUFFERERS.

(2) IN OVER 90% OF THE CASES THERE WERE RELATIVELY HIGHER POSITIVE REACTIONS TO BASAL METABOLISM TESTS AND IODINE-131 ABSORPTION TESTS. THIS IS QUITE MEANINGFUL IN THE DIAGNOSIS OF HYPERTHYROIDISM.

(3) PERMANENT CURE BY CHEMICAL TREATMENT CANNOT BE EASILY EFFECTED. SUBTOTAL THYROIDECTOMY IS MORE IDEAL. IN A SMALL PORTION OF THESE, HERE IODINE-131 TREATMENT ALSO YIELDED EXCELLENT RESULTS. BUT THE NUMBER OF CASES IS TOO SMALL TO BASE OUR CONCLUSIONS.

(4) IN ONE CASE WHERE IODINE-131 WAS USED IN TREATMENT, THE PATIENT DEVELOPED ACUTE MONONUCLEO-LEUCOCYTOSIS AFTER 15 MONTHS. WE HAVE NO WAY OF DETERMINING WHETHER IT WAS CAUSED BY THE IODINE-131.

REPORT ON THREE CASES OF EPHEDRIN POISONING By SHANG-KUAN KUANG-FANG (0006 1351 0385 5364), FROM THE 47TH HOSPITAL OF THE PEOPLE'S LIBERATION ARMY; p.350.

THE SYMPTOMS SEEN IN THE CASES MENTIONED IN THIS ARTICLE ARE SIMILAR TO THE PHARMACOLOGICAL EFFECTS OF EPHEDRIN, MENTIONED IN TEXT-BOOKS, EXCEPTING FOR INDIVIDUAL SYMPTOMS AND THE EXTENT. CHU (1) AND CHANG (2) BOTH BELIEVED THAT THE EFFECT OF EPHEDRIN ON SWEAT GLAND SECRETION WAS NOT NOTICEABLE. THEY DID NOT MENTION THAT IT HAD AN EFFECT ON RAISING BODY TEMPERATURE. THERE HAS BEEN LITTLE DESCRIPTION OF THIS DRUG ON THE ALIMENTARY TRACT.

THIS ARTICLE FINDS THAT THERE IS A STRONG EFFECT OF EPHEDRIN IN CAUSING PERSPIRATION, INCREASING BODY TEMPERATURE (38-39.2°C), AND VERY NOTICEABLE EFFECTS ON THE ALIMENTARY TRACT. SYMPTOMS OF STOMACH PAINS, PRESSURE PAINS, DISTENTION, NAUSEA, VOMITING, LOSS OF APPETITE, UNSMOOTH SWALLOWING, ETC.

THERE HAS BEEN VERY LITTLE LITERATURE ON THE TOXIC DOSAGE OF EPHEDRIN. THE PHARMACOPIA PROVIDES FOR A MAXIMUM DOSAGE OF 50MG EACH TIME, AND A DAILY MAXIMUM OF 150MG. UP TO THIS MOMENT THERE HAS BEEN

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NO CASE OF TOXEMIA CAUSING DEATH.

YUAN (3) REPORTS A CASE WHERE 0.775GM WAS TAKEN INTERNALLY WITHOUT LEADING TO DEATH, WITHOUT SHOWING EVEN SERIOUS SYMPTOMS OF POISONING. THIS ARTICLE MENTIONS A CASE WHERE TOTAL DAILY DOSE WAS AS MUCH AS 1.8GM, WITHOUT CAUSING DEATH. THIS SHOWS THAT TOXICITY OF EPHEDRIN IS REALLY NOT VERY SERIOUS, AND THAT THERE IS A GREAT DISTANCE BETWEEN CURATIVE DOSAGE AND FATAL DOSES.

- REFERENCE: (1) CHU NAI (2612 7845), TEXT MATERIAL, MEDICAL COLLEGE OF THE UNIVERSITY OF NANKING, 1952.  
(2) CHANG CH'ANG-SHAO (1728 2490 4801), PHARMACOLOGY, PUBLISHED BY PEOPLE'S HEALTH PUBLISHING CO., PEIPING, 1958, p. 137.  
(3) YUAN SHAO-YING (5913 1421 5391), "A CASE OF EPHEDRIN POISONING" IN CHINESE JOURNAL OF INTERNAL MEDICINE, VOL. 7, PAGE 179, 1959.

MANUSCRIPT RECEIVED 1 SEPT. 1962, REVISED 14 MARCH 1963.

ANALYSIS OF EFFICACY IN THE TREATMENT OF 50 CASES OF HYPERTHYROIDISM WITH IODINE-131 By HSU TENG-JEN (1776 4098 0088) AND HSU YUEH-E (6079 2588 1494), DEPARTMENT OF INTERNAL MEDICINE, FIRST SUBSIDIARY HOSPITAL, SECOND COLLEGE OF MILITARY MEDICINE; pp. 351-54.

IODINE-131 TREATMENT OF HYPERTHYROIDISM HAS ALREADY BEEN ACCLAIMED AS A SIMPLE, EFFECTIVE, AND SAFE METHOD. THIS HOSPITAL HAS BEEN USING THIS METHOD SINCE NOVEMBER 1958. HEREIN FOLLOWS THE ANALYTICAL REPORT OF 50 CASES OF HYPERTHYROIDISM ENDING AUGUST 1961, WHICH HAD BEEN ACCCOMPANIED BY POST-CURE VISITATION.

DISCUSSION: (1) Dosage Problems: How are we to grasp the dosage problem accurately in this treatment? This is a problem that has not been resolved up to this day. Certain authors, such as DeGowin, and Ellis, etc., believe that a single large dose is not easy to control. They advocate the repeated small doses of 0.5-2.0 MILLI-CURIE, once weekly. This should be repeated for several weeks until the symptoms disappear.

But a majority of authors still believe in using a single large dose to control the symptoms. They believe that repeated small doses not only prolongs treatment time, but also raises the organs' resistance to radiation. No matter what the differences are in the dosages advocated, treatment results are not noticeably different. That is to say, in about one third of the cases, the patients were not cured after a single dose. Around 10% of the patients developed CHRONIC HYPOTHYROIDISM.

Generally, it is believed that there are the following reasons for not being able to determine the dosage accurately: (a) It is not easy to determine the mass of the thyroid gland. (b) The distribution

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OF IODINE-131 IN THE THYROID IS NOT ENTIRELY EVEN. (c) THE IODINE ADSORPTION RATE OF THE THYROID AND THE EFFECTIVE SEMI-REDUCTION TRACE INDEX IS NOT UNIFORM WITH CURATIVE DOSING. THEREFORE THE RESULTS OBTAINED THROUGH THIS INDEX DETERMINATION ARE NOT A DEPENDABLE BASIS FOR DOSAGE CALCULATIONS. (d) SENSITIVITY OF VARIOUS INDIVIDUALS TO RADIATION ARE QUITE DIFFERENT.

EVEN THOUGH THIS IS TRUE, WE BELIEVE THAT AS FAR AS THE GREAT MAJORITY OF CASES IS CONCERNED, THE WEIGHT OF THE THYROID GLAND IS STILL THE ONLY DETERMINING FACTOR. IN OUR GROUP OF PATIENTS THE CASES NOT ACCCOMPANIED BY THYROID SWELLING, ASIDE FROM ONE CASE WHICH WAS SO LIGHT THAT ONLY ONE DOSE OF 3 MILLI-CURIE WAS USED IN CURING THE PATIENT, ALL OTHERS REQUIRED A SINGLE DOSE OF 6MC BEFORE BEING COMPLETELY RELIEVED. IN TWO CASES THE INITIAL DOSES WERE 4MC. LATER THEY HAD TO RECEIVE A SECOND TREATMENT.

IN THE ANALYSIS OF 31 CASES WHICH WERE CURES WITH A SINGLE DOSE, THE ACTUAL PER GRAM OF THYROID GLAND DOSAGE WAS ABOUT 120 MICRO-CURIE. IN DEGREE-II HYPERTHYROIDISM SUFFERERS, THE SINGLE DOSE CURE RATE WAS NOTICEABLY REDUCED. THIS WAS PERHAPS DUE TO OUR INSUFFICIENT UNDERSTANDING IN THE ESTIMATE OF THYROID WEIGHT. OR PERHAPS IT WAS BECAUSE WE ALLOWED FOR TOO LOW A DOSAGE.

THIS IS BECAUSE WE HAVE PROVIDED FOR 110-130 MICRO-CURIE OF ACTUAL IODINE-131 ADSORPTION PER GRAM OF ORGAN FOR 0 AND 1-DEGREE THYROID SWELLING. BUT FOR 11-DEGREE PATIENTS WE HAD ONLY ALLOWED 90-100 MICRO-CURIE. OUR INITIAL BELIEF IS THAT FOR CASES OF "SPREADING" HYPERTHYROIDISM, A PER GRAM DOSE OF 120 MICRO-CURIE (ACTUAL WEIGHT) OF IODINE-131 IS RELATIVELY APPROPRIATE.

(2) CARCINOGENIC EFFECT: UP TILL NOW, AROUND 100,000 CASES HAVE BEEN TREATED WITH IODINE-131. THERE HAS YET TO BE ONE CASE WHERE IT WAS REPORTED THAT THE IODINE WAS THE AGENT INDUCING THYROID CANCER.

RECENTLY, SHELING REPORTS OF A CASE WHERE A PATIENT UNDER 20 WAS GIVEN IODINE-131 IN TREATMENT. AFTER 5-14 YEARS OF TREATMENT HE DEVELOPED THYROID NODULES. PATHOLOGICAL CHANGES SHOWED ACCELERATED GROWTH OF THE THYROID EPITHELIAL CELLS. CONSIDERATION WAS GIVEN FOR LATE AFTER EFFECTS OF RADIATION-INDUCED CARCINOMA. IN THE CASE OF YOUNG PEOPLE, PARTICULARLY THOSE UNDER 20 YEARS OF AGE, IT WOULD BE BEST NOT TO START IODINE-131 TREATMENT.

(3) EFFECTS ON GLANDS OF THE REPRODUCTIVE SYSTEM: ACCORDING TO THE ESTIMATE OF MANY AUTHORS, THE AMOUNT OF RADIATION RECEIVED BY THE REPRODUCTIVE GLANDS IN IODINE-131 TREATMENT IS EXTREMELY SMALL. BERCY POINTS OUT THAT THE ORAL INTAKE OF 10 MILLI-CURIE OF IODINE-131 IS EQUAL TO THE OVARIES RECEIVING 1.25 RAD (ONE RAD IS EQUIVALENT TO ONE GRAM OF THE ORGAN ABSORBING 100 ERGS OF ENERGY) OF RADIATION. THIS IS 3-4 TIMES LESS THAN THAT RECEIVED BY THE BODY IN TAKING AN X-RAY EXAMINATION OF THE STOMACH OR THE SPINAL COLUMN. BLOMFIELD BELIEVES THAT RADIATION ON THE REPRODUCTIVE GLANDS BY THE IODINE-131 DOSE USED IN TREATMENT OF HYPERTHYROIDISM IS 0.3% OF THE NATURAL DOSE, WHILE THE SAME FIGURE FOR X-RAY DIAGNOSIS IS AROUND 22%.

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(4) LEUKEMIA: UP TO 1962, THERE HAS ALREADY BEEN REPORTS ON 19 CASES OF THIS DISEASE ACCOMPANYING IODINE-131 TREATMENT OF HYPERTHYROIDISM. IN THE POST-TREATMENT VISITATION OF THE 50 CASES IN THIS DIVISION, HEMATOLOGICAL TESTS SHOWED THAT WHITE BLOOD CORPUSCLE COUNTS WERE ALL WITHIN NORMAL LIMITS.

THE MAJORITY OF AUTHORS FEEL THAT THE LEUKEMIA CASES IN THE IODINE-131 TREATMENT HYPERTHYROIDISM IS NOT ANY HIGHER THAN THE NATURAL INCIDENCE OF THE DISEASE ITSELF. POCHIN CARRIED OUT POST-TREATMENT VISITATION IN 60,000 CASES OF IODINE-131 TREATMENT OF HYPERTHYROIDISM. IN 222,000 MAN-YEARS HE ONLY DISCOVERED 18 CASES OF LEUKEMIA. IF FIGURED ACCORDING TO THE NATURAL INCIDENCE THERE SHOULD HAVE BEEN 21 SUFFERERS OF THIS DISEASE.

RECENTLY WERNER GAVE HIS RESULTS IN FOLLOW-UPS OF 32,000 CASES WHERE IODINE-131 WAS USED. IN 142,000 MAN-YEARS THERE WERE ONLY 10 CASES OF LEUKEMIA; YET ACCORDING TO THE NATURAL INCIDENCE THIS SHOULD HAVE BEEN 13.8 CASES.

SUMMARY: THIS ARTICLE REPORTS ON 50 CASES OF IODINE-131 TREATMENT OF HYPERTHYROIDISM, WITH AT LEAST ONE YEAR OF AFTER-TREATMENT VISITATION. ASIDE FROM ONE CASE, WHERE THERE WAS ONLY PARTIAL RELIEF, 49 CASES SHOWED COMPLETE RETURN TO NORMAL FUNCTION OF THYROID FUNCTION. AMONG THESE THERE WERE 31 CASES WHICH WERE CURED AFTER SINGLE DOSE (62%), 15 CASES OF TWO DOSES (30%), AND THREE CASES OF THREE DOSES (6%). THERE WAS NOT ONE CASE WHERE THERE WAS LOWERING OF THYROID FUNCTION.

ANALYSIS OF FACTORS INFLUENCING TREATMENT REACTION SHOWED THAT IN CASES WHERE THERE WAS HIGH DEGREE OF SWELLING (DEGREE-II AND ABOVE), WHERE ANTI-THYROID DRUGS WERE USED, OR WHERE THE PATIENTS HAD A LONGER HISTORY OF THE DISEASE (OVER ONE YEAR), THE DOSAGE SHOULD BE APPROPRIATELY INCREASED.

THERE IS INITIAL BELIEF AMONG THOSE WHO ADVOCATE SINGLE DOSE TREATMENT THAT FOR THE CHINESE "SPREADING" TYPE OF HYPERTHYROIDISM, THE APPROPRIATE DOSE SHOULD BE 120 MILLI-CURIE PER GRAM OF THYROID (ACTUAL WEIGHT).

ALTHOUGH THE USE OF IODINE-131 CAN CAUSE LATE-AFTER CARCINOGENOUS IN THE TREATMENT OF HYPERTHYROIDISM, THE POSSIBILITY OF INFLUENCING THE REPRODUCTIVE GLANDS BY SUCH USE HAS NOT BEEN PROVEN CLINICALLY. THEREFORE, THE USE OF IODINE-131 IN SUCH TREATMENT CAN BE SAID TO BE A SIMPLE, CONVENIENT, EFFECTIVE, AND SAFE METHOD.

RECENT OBSERVATIONS ON THE USE OF DOMESTIC PRODUCED PHENETHYLBIQUANIDE (CHIANG T'ANG LING) IN THE TREATMENT OF 49 CASES OF DIABETES: BY SHIH MAN-CHU (2457 2581 3796), CH'ien JUNG-LI (6929 2837 4539), AND WANg SHU-HSIEN (3769 0647 0752), OF THE SYSTEMATIC INTERNAL MEDICINE TEACHING RESEARCH DIVISION OF THE FIRST SUBSIDIARY HOSPITAL, AT THE PEIPING MEDICAL COLLEGE; pp. 359-61.

SINCE FEBRUARY 1962 THIS HOSPITAL HAS BEEN USING DOMESTIC PRODUCED PHENETHYLBIQUANIDE -- "CHIANG-T'ANG-LING" (PRODUCED BY PEIPING

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MUNICIPAL PHARMACEUTICAL WORKS) -- IN THE TREATMENT OF DIABETES. IN AUGUST OF THE SAME YEAR, AFTER THREE MONTHS OF OBSERVATION THERE WERE 49 PATIENTS; AMONG THESE WERE 39 OUT-PATIENTS AND 10 IN-PATIENTS. FOR EACH CASE THERE WAS ALSO A PERIOD OF COMPARATIVE OBSERVATION OF TWO TO FOUR WEEKS. ONLY AFTER FOOD AND DRINK, BLOOD SUGAR, AND URINE SUGAR CONDITIONS WERE STABLE DID WE COMMENCE TREATMENT WITH THIS DRUG. WE NOW PRESENT A REPORT ON OUR INITIAL OBSERVATIONS, AS FOLLOWS.

A DISCUSSION ON CERTAIN RARELY SEEN ELECTROCARDIOGRAPHIC CHANGES ACCOMPANYING CHRONIC CONSTRICTIVE PERICARDITIS: By LIU TE-JUN (0491 1796 3387), LIU SHIH-CHEN (0491 1102 3791), AND HUANG WAN (7806 1354), DEPARTMENT OF CARDIAL MEDICINE, CARDIO-VASCULAR DISEASE RESEARCH INSTITUTE, CHINESE ACADEMY OF MEDICAL SCIENCES; pp. 362-4.

THERE HAVE BEEN REPORTS ON GENERAL ELECTRO-CARDIOGRAPHIC CHANGES IN CHRONIC CONSTRICTIVE PERICARDITIS. WE HAVE REPEATEDLY SEEN MANY NON-STANDARD ELECTRO-CARDIOGRAPH CHANGES IN THESE PATIENTS. ASIDE FROM SUCH ORDINARY CHANGES, ITS SPECIAL CHARACTERISTICS ARE STANDARD-MODE THICKENING OF THE RIGHT VENTRICLE OR INCOMPLETE BLACKENING IN TRANSMISSION IN THE RIGHT VENTRICULAR CAPILLARIES.

THERE IS VERY LITTLE MENTION IN DOMESTIC AND FOREIGN LITERATURE CONCERNING THESE TYPES OF ELECTROCARDIOGRAMS. NEITHER IS THERE ANY REPORT ON THE MECHANISM OF SUCH CHANGES, THEIR CLINICAL MEANING, AND THEIR HEMODYNAMIC CHARACTERISTICS. IN ORDER TO CLARIFY THESE SPECIALIZED CHANGES, WITH RESPECT TO THEIR PATHOLOGICAL PHYSIOLOGY AND THEIR CLINICAL MEANING, WE HAVE CARRIED OUT ANALYSIS ON ALL ELECTRO-CARDIOGRAMS ON 85 PROVEN CASES OF CONSTRICTIVE PERICARDITIS, WHERE WE HAVE OPERATED, OR HAD CARRIED OUT AUTOPSIES IN OUR RESEARCH INSTITUTE (AS WELL AS OUR FORMER THORACIC HOSPITAL).

IN 55 OF THESE CASES, PROBING HAD BEEN CONDUCTED ON THE RIGHT VENTRICLE. THEREFORE WE HAVE THE DATA REFLECTING HEMODYNAMIC CHANGES IN THESE PATIENTS. FOR THE SAKE OF ACHIEVING THE GOALS OF THIS ARTICLE, WE ARE DIVIDING THE 85 CASES INTO TWO MAJOR CLASSIFICATIONS: GROUP I, WHERE THERE WERE SYMPTOMS MENTIONED ABOVE; AND GROUP II, OTHER CASES. WE HAVE CARRIED OUT COMPARISON WITH RESPECT TO THEIR CLINICAL MANIFESTATIONS, COURSE OF THE ILLNESSES, PROGNOSIS, AS WELL AS HEMODYNAMIC CHARACTERISTICS.

REPORT ON TWO CASES OF ANTHRAX-BACILLARY MENINGITIS: By CHU CH'UAN-HSI (4376 0278 3886), EMPLOYEE HOSPITAL OF THE SHENSI YENCH'ANG OIL FIELD, AND T'UNG FU-SHENG (0157 4395 3932), EMPLOYEE HOSPITAL OF THE POWTOW HANDICRAFT ADMINISTRATION; pp. 364.

MENINGITIS CAUSED BY ANTHRAX BACILLI IS RARELY SEEN CLINICALLY. BUT ITS PROGNOSIS IS EXTREMELY BAD, MOST PATIENTS DYING FROM IT, IN THE END. THE TWO AUTHORS EACH REPORTED ON ONE CASE, BOTH OF WHICH FINALLY ENDED IN DEATH. CLINICAL MANIFESTATIONS INCLUDED FEVER, HEADACHES, VOMITING, SPASMS, INCOHERENCY, COMATOSES, STIFFENING OF THE NECK, AND OTHER SYMPTOMS AND BODY FEATURES OF MENINGITIS.

THE SPINAL FLUID PRESENTS PURULENT CHANGES, WHICH APPEARS BLOODY. DIRECT STAIN SLIDE OBSERVATIONS SHOW MANY GRAM-POSITIVE THICK BACILLI, ARRANGED IN CHAINS. CULTURES OF THE SPINAL FLUIDS OF BOTH

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PATIENTS WERE POSITIVE IN REACTION. BLOOD CULTURES IN BOTH CASES DID NOT PRODUCE GROWTH OF BACTERIA. (BOTH AUTHORS BELIEVE THAT THIS MIGHT BE DUE TO THE FACT THAT BLOOD CULTURES WERE MADE AFTER THE POSITIVE REACTION STAGE)

AS FAR AS TREATMENT IS CONCERNED, THE AUTHORS SUGGEST THAT EARLY DIAGNOSIS BE MADE AND THAT SENSITIVE ANTI-BIOTICS BE INJECTED INTO THE NEURILEMMA FOR BEST EFFECTIVENESS.

IN SO FAR AS EPIDEMIOLOGY IS CONCERNED, THERE IS NO CLEAR HISTORY OF CONTACT WITH DISEASE-CAUSING TOXIN OR DISEASED PATIENTS. IN ONE OF THE CASES, THE PATIENT, A CADRE, HAD BEEN IN HOSPITAL AS A TUBERCULAR PATIENT FOR SIX MONTHS. HE HAD ONLY GONE OUT ONCE, AND HAD ONLY REPORTED SEEING A MULE BEING SKINNED. UPON RETURN TO THE HOSPITAL, THIS DISEASE STARTED.

THE OTHER CASE WAS A FOUNDRY WORKER WHO HAD ALWAYS BEEN HEALTHY. PRIOR TO HIS SICKNESS (2-3 DAYS BEFORE), HE HAD EATEN MEAT AT A BAR. AT THAT TIME, HE HAD COMPLAINED OF ALIMENTARY TRACT SYMPTOMS. LATER SYMPTOMS AND BODY FEATURES OF MENINGITIS APPEARED. THE AUTHOR BELIEVES THAT THE PATIENT MIGHT HAVE BEEN INFECTED BY THE BACILLI THROUGH THE ALIMENTARY TRACT, BUT THERE IS NO LABORATORY PROOF.

THE ABOVE TWO CASES SHOW THAT IT IS POSSIBLE NOT TO BE ABLE TO RECEIVE ANY CLUES AS TO THE ORIGIN OF THE DISEASE FROM THE EPIDEMIOLOGICAL POINT OF VIEW. THIS IS WORTHY OF OUR ATTENTION. (CONDENSED BY THE EDITORIAL COMMITTEE OF THE CHINESE JOURNAL OF INTERNAL MEDICINE; MANUSCRIPT RECEIVED 10 SEPTEMBER 1962.)

DISCUSSIONS ON CORONARY SINUS RHYTHM: BY CH'EN WAN-CH'UN (7115 8001 2504), WU KUANG-HSU (0702 0342 3549), WANG HENG-JUN (3769 1854 3387), AND TUNG CH'ENG-LANG (5516 2110 3809), OF THE DEPARTMENT OF INTERNAL MEDICINE, SHANGHAI SIXTH PEOPLE'S HOSPITAL; pp. 365-68.

SUMMARY: (1) THIS ARTICLE REPORTS ON SEVEN CASES CONCERNED WITH CORONARY SINUS RHYTHM, WHERE THE II, III, AND AVF LEADS SHOWED AN ANTRIDROMIC P CURVE; AND WHERE THE P-R EXCEEDED 0.12 SECONDS.

(2) THERE WAS PROOF IN THREE OF THE SEVEN CASES, OF SLACKENING OF ATRIO-VENTRICULAR DROME. IN TWO OF THESE CASES, THERE WAS SECONDARY ATRIO-VENTRICULAR DROME SLACKENING DURING NODULAR RHYTHM. IN ONE CASE, EVEN BEFORE ONSET, 'WEN'S (2429) PHENOMENON HAD ALREADY APPEARED DURING THE SINUS RHYTHM.

(3) AFTER REVIEWING LITERATURE OF TWO DIFFERENT POINTS OF VIEW AND SUMMARIZING THE CLINICAL AND ELECTROCARDIOGRAPHIC CHARACTERISTICS, WE BELIEVE THAT THIS TYPE OF ELECTROCARDIOGRAM SHOULD BE DIAGNOSED AS NODULAR RHYTHM ACCCOMPANIED BY DESCENDING ATRIO-VENTRICULAR SLACKENING OF DROME.

(4) AS FAR AS FACTORS WHICH LEAD TO THIS PHENOMENON IS CONCERNED, OUR DATA POINT OUT THAT ASIDE FROM THE EFFECTS OF REHMANNIA POISONING, IT MIGHT ALSO BE CAUSED BY THE AFTER-EFFECTS OF INADEQUATE RESPIRATORY FUNCTION IN AGED PATIENTS.

REPORT ON A CASE OF ASTHMA DUE TO HYPERSENSITIVITY TO FURACILLIN: BY YANG TE-HSIN (2799 1796 7451), CH'EN HSING-BHAN (7115 4164 1472), AND LIU HUNG-CHEN (0491 1347 2182), OF THE 261ST HOSPITAL OF THE PEOPLE'S LIBERATION ARMY; p.368.

THE PATIENT, MALE, AGED 18, TOOK 100MG EACH OF ESSENCE OF COPTIS JAPONICA AND FURACILLIN, FOR "BACILLARY DYSENTERY" ON 22 AUGUST 1962. FIVE HOURS AFTER TAKING THESE DRUGS, HE SUDDENLY FELT UNEASINESS IN THE CHEST, HARDNESS OF BREATH, AND THE EXPECTORATION OF MINUTE QUANTITIES OF MUCOUS. THE SYMPTOMS LESSENED THE NEXT MORNING.

BUT HE REPEATED THE DOSAGE TWICE THAT DAY. THIS AGAIN LEADS TO SIMILAR SYMPTOMS ACCCOMPANIED BY DIZZINESS, FEVER, AND THEREUPON ENTERED THE HOSPITAL THROUGH THE EMERGENCY CLINIC ON AUGUST 23. PAST HISTORY WAS NEGATIVE, HE HAD NEVER TAKEN THE ABOVE-MENTIONED DRUGS BEFORE.

INITIAL EXAMINATION: BODY TEMPERATURE 38.7°C, STRENGTHENING OF COARSE BREATHING SOUNDS IN BOTH LUNGS. ASTHMATIC MURMUR WAS NOT AUDIBLE. HEART WAS NORMAL. THERE WERE NO OTHER POSITIVE BODY CHARACTERISTICS. X-RAY FLUOROSCOPY DISCLOSED NORMAL HEART, LUNGS, AND DIAPHRAGM.

RED BLOOD COUNT WAS 4.35 MILLION, HEMATOPROTEINS 15GM%, WHITE BLOOD COUNT 14,500, NEUTROCYTES 2%, ACIDOSINOCYTE 12% AND 880, LYMPH 11%, MONONUCLEOCYTE 1%, BLOOD PRECIPITATION 16MM. THERE WERE ACARIS SPORES IN THE FECES. NO ACIDOHILOCYTES IN THE SPUTUM.

UPON ENTRY INTO THE HOSPITAL, DOSAGES OF ABOVE DRUGS WERE STOPPED. HE WAS GIVEN AMINOPHYLLINE ORALLY AND INTRAMUSCULAR STREPTOMYCIN. ON AUGUST 25, ALL SYMPTOMS DISAPPEARED. ON AUGUST 28, HE WAS DOSED WITH SANTONIN, WHICH CAUSED HIM TO EXPEL 14 PIECES OF ASCARES. FECAL TESTS (THREE TIMES) THEREAFTER WERE ALL NEGATIVE.

ON SEPTEMBER 3, HE WAS GIVEN TWO DOSES OF ESSENCE OF COPTIS JAPONICA (150MG EACH TIME), WITHOUT ANY BAD EFFECTS. AT 17 AND 21 HOURS, DEPMEMBER 3, HE AGAIN TOOK 50MG OF FURACILLIN. AT 23:30 HOURS, HARDNESS OF BREATHING APPEARED AGAIN, ACCOMPANIED BY FEVER. THE PATIENT RECOVERED FROM THIS ATTACK WITHOUT TREATMENT, HIS BODY TEMPERATURE RETURNING TO NORMAL. PATIENT WAS DISCHARGED ON SEPTEMBER 17. THE FINAL DIAGNOSIS WAS ARTHYM DUE TO HYPERSENSITIVITY TO FURACILLIN. (MANUSCRIPT RECEIVED 12 NOVEMBER 1962.)

REPORT ON ABNORMAL HEART RHYTHM & DROME SLACKENING OBSERVATIONS IN 100 CASES OF HEART MUSCLE OBSTRUCTION & NECROSIS: BY FENG EHR-LU (7458 3643 4389) OF THE KIRIN PROVINCIAL HOSPITAL; DIRECTED BY P.A. PAEBCKAX; pp.371-2.

THIS ARTICLE MAKES INITIAL DISCOURSES ON THE CLASSIFICATION, INCIDENCE, RELATIONSHIP OF OBSTRUCTIVE NECROSIS IN VARIOUS PARTS OF THE HEART MUSCLES. IN PARTICULAR, IT STUDIED THE EFFECTS ON THE PROGNOSIS BY THE ABNORMAL HEART RHYTHM AND DROME SLACKENING. DURING SUCH OBSTRUCTIVE NECROSIS. THE AUTHOR, DURING HIS STUDIES IN RUSSIA,

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DID OBSERVE THE CASE HISTORIES OF 100 SUCH CASES. (MANUSCRIPT RECEIVED 16 JULY 1962, REVISED 11 JANUARY 1963.)

BONE MARROW RESEARCH ON THE HUMAN ADULT ILLUM -- AN OBSERVATION REPORT ON 102 CASES IN THE PEIPING AREA: BY WANG SHENG-YUAN (3769 5116 6678), AND FU SHIH-HSIEN (0102 1102 7359), BOTH OF THE HEMATOLOGICAL DIVISION OF THE HISTOLOGICAL TEACHING RESEARCH DIVISION OF PEIPING MEDICAL COLLEGE; WANG LIANG-HSU (3769 5328 4872), WANG SHIH-CHUN (3769 0013 0193), AND MO CH'ING-I (5459 1987 5030), ALL FROM THE HEMATOLOGICAL DIVISION OF THE INTERNAL MEDICINE TEACHING & RESEARCH DIVISION OF THE HEALTH DEPARTMENT AT THE SAME COLLEGE; PP.373-8.

THIS COLLEGE COMMENCED THIS ITEM OF RESEARCH IN 1958. INVESTIGATION WAS CARRIED OUT ON 128 PERSONS WHO WERE EXAMINED.

SUMMARY: (1) THIS ARTICLE REPORTS ON 102 CASES (38 MALE AND 64 FEMALE), OF NORMAL ADULTS (18-64 YEARS OF AGE); WITH RESULTS OF ILLIAL BONE MARROW AND PERIPHERAL BLOOD EXAMINATIONS.

(2) TOTAL NEUCLEOCYTES IN THE MALE WAS  $78,700/\text{mm}^3$  (45,000 - 188,200); IN THE FEMALE, 99,100 (44,000 - 180,000). IN COMMON, THE CLASSIFICATION OF THE MARROW IN BOTH SEXES WAS: CELLULAR - 59.29%, HEMATOCYTES - 19.54%, G/E = 3.06/1, LYMPHOCYTES 19.01%, MONONUCLEOCYTES 0.98%, AND OTHER CELLS - 2.85%.

(3) CELLULAR DIVISION CONSISTED OF 0.55% OF THE TOTAL CLASSIFICATION (HEMOCYTE SYSTEM: 0.44%, FOUR TIMES THAT OF GRANULOCYTES 0.11%). DURING THE GROWTH PERIOD CELLULAR SUBDIVISION, THERE WAS GREATER AMOUNT OF MIDDLE AND YOUNGER STAGED CELLS, FOLLOWED BY PRIMITIVE YOUNG CELLS, AND A MINIMUM OF CYTOBLASTS. IN THE CASE OF GRANULOCYTES, CELLULAR SUBDIVISION DISAPPEARED DURING THE LATE-YOUNG CELL STAGE.

(4) AGE DIFFERENCES IN THE BONE MARROW PICTURE WAS NO LONGER NOTICEABLE UPON THE REACHING OF ADULTHOOD. SEXUALLY, TOTAL NUCLEOCYTE NUMBER IS GREATER IN THE FEMALE. MARROW CLASSIFICATION WAS SIMILAR IN BOTH SEXES.

(5) MARROW PICTURE OF BOTH THE ILLUM AND STERNUM WAS SIMILAR. ILLIAC PUNCTURE IS MUCH SAFER THAN STERNAL PUNCTURE.

(6) THE ARTICLE POINTS OUT THAT THERE IS A TENDENCY TOWARD GREATER NUMBER OF LYMPHOCYTES IN THE CHINESE MARROW PICTURE THAN IN THE CASE OF AMERICANS AND EUROPEANS. DISCUSSION AND ANALYSIS OF THIS WAS CARRIED OUT.

NOTE: NORMAL BLOOD COUNT AND MARROW NUCLEOCYTIC COUNT WERE COMPLETED BY THE SECTION 2 LABORATORY OF THE THIRD SUBSIDIARY HOSPITAL AT THE PEIPING MEDICAL COLLEGE. STATISTICAL WORK WAS ALSO DONE WITH THE ASSISTANCE OF DR. WU CHIANG-SHENG (0702 3068 5116), HISTOLOGICAL TEACHING RESEARCH DIVISION OF SAID COLLEGE.

HEMATOCYTE THERMOLYSIS TEST: BY LIU CH'ING-YUAN (0491 37 3293), PRESENTLY AT TSUN-I PEOPLE'S HOSPITAL, SUNG TSENG-HSUEN (1345 1073 3872), AND YANG T'IEN-YING (2799 1131 2819), ALL THREE OF WHOM ARE FROM THE BLOOD TRANSFUSION AND HEMATOLOGICAL RESEARCH INSTITUTE OF

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THE CHINESE COLLEGE OF MEDICAL SCIENCES; PP. 379-80.

SPORADIC SOMNOLENT HEMATO-ALBUMINURIA IS A CHRONIC HEMOLYTIC DISEASE WHICH IS RELATIVELY RARE CLINICALLY. AT THE PRESENT TIME THE COMMONLY USED LABORATORY DIAGNOSTIC METHODS ARE HAM'S ACID SERUM TEST, CROSBY'S TEST, AND THE HEMATOZYTE THERMOLYSIS TEST (ALSO KNOWN AS THE HEAT RESISTANCE TEST). THIS LAST TEST WAS ESTABLISHED BY HEGGLIN AND MAIER (AMERICAN JOURNAL OF MEDICAL SCIENCE, 207: 674, 1944). WE HAVE IMPROVED THIS TEST AND OBSERVED ITS USE ON 75 CASES OF VARIOUS HEMATO DISEASES AND 20 NORMAL PERSONS, AND WE INTRODUCE OUR FINDINGS TO YOU.

MATERIALS & METHOD: A. SOURCES OF MATERIAL: THE OBJECTIVES OF OUR EXAMINATION INCLUDED 20 HEALTHY PERSONS AND 75 CASES CLEARLY DIAGNOSED AS HEMATO DISEASE SUFFERERS (INCLUDING 25 CASES OF SPORADIC SOMNOLENT HEMATOALBUMINURIA, 23 CASES OF APLASTIC ANEMIA, FOUR CASES OF PRIMARY AUTOTOXICHEMOLYTIC ANEMIA, 2 CASES OF ANEMIA MEDITERRANEA, NINE CASES OF ACUTE LEUKEMIA, SIX CASES OF CHRONIC GRANULOCYTIC AND LYMPHOCYTIC LEUKEMIA, TWO CASES OF THROMBOPENIC PURPURA, AND ONE CASE EACH OF HYPERCLENIA, PURPURA ANAPHYLACTICA, ANTIDROMIC COLO-COAULATION OF BLOOD, AND NUTRITIONAL MEGLABLASTIC ANEMIA).

B. TEST METHOD: ONE CC OF VENOUS BLOOD IS WITHDRAWN WITH A DRY, STERILE INJECTION TUBE, AND PLACED INTO A DRY 10MM TEST TUBE. THIS IS CORKED UP AND PLACED INSIDE A 37°C INCUBATOR. ONE HOUR LATER THE SPECIMEN IS OBSERVED WITH THE NAKED EYE TO SEE WHETHER THERE IS HEMOLYSIS. IF THERE IS NONE, THE SPECIMEN IS RETURNED TO THE INCUBATOR UNTIL THE 6TH AND 24TH HOURS, THEN WE HAVE OBTAINED A NEGATIVE RESULT. IF THERE IS HEMOLYSIS, THE RESULT IS CONSIDER POSITIVE. NORMAL BLOOD IS USED AS A CONTROL.

C. ITEMS THAT REQUIRE ATTENTION: (1) FIRST THE INJECTION TUBE, NEEDLE, AND TEST TUBE MUST BE EXAMINED TO SEE THAT THERE IS ABSOLUTE DRYNESS. OTHERWISE A PSEUDO-POSITIVE REACTION CAN RESULT.

(2) THE NEEDLE SHOULD BE A THICK ONE, LEST A THIN NEEDLE CAUSE HEMOLYSIS. (3) WHEN BLOOD IS PLACED INTO THE TEST TUBE, IT SHOULD BE ALLOWED TO FLOW SLOWLY DOWN THE SIDE OF THE TUBE, AND IS QUIETLY PLACED INSIDE THE INCUBATOR. EXCESSIVE SHAKING IS TO BE AVOIDED.

(4) THE TEST TUBE SHOULD BE TIGHTLY STOPPED WITH CORK IN ORDER TO PREVENT BACTERIA FROM ENTERING AND CAUSE HEMOLYSIS, INFLUENCING TEST RESULT. (5) IF THERE IS NO SHRINKING OF THE BLOOD CLOTS AFTER ONE HOUR, A DRY GLASS ROD MIGHT BE USED TO SEPARATE THE CLOTS FROM THE SIDE OF THE TUBE, SO THAT IT MIGHT FACILITATE OBSERVATIONS AFTER SHRINKAGE. (6) THE TEMPERATURE MUST BE EXACTLY 37°C. HIGHER AND LOWER TEMPERATURES WILL INFLUENCE TEST RESULTS.

RESULTS AND DISCUSSION: TESTS RESULTS SHOWED THAT ABIDE FROM 25 CASES OF SPORADIC SOMNOLENT HEMO-ALBUMINURIA, WHICH ALL GAVE POSITIVE RESULTS, NORMAL BLOOD AND BLOOD FROM OTHER BLOOD DISEASE SUFFERERS ALL SHOWED A NEGATIVE REACTION. THEREFORE THE TEST IS PROVEN TO BE OF DEFINITE VALUE TOWARDS THIS PARTICULAR DISEASE. IN PARTICULAR, IT CAN BE USED TO DIFFERENTIATE BETWEEN THE DISEASE AND APLASTIC ANEMIA.

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IN NORMAL BLOOD, ASIDE FROM TWO CASES WHICH SHOWED HEMOLYSIS AT 48 HOURS, IT APPEARED BETWEEN 72-96 HOURS. IN SPORADIC SOMNOLENT EHMATOALBUMENURIA BUFFERERS THE DEGREE AND TIME OF HEMOLYSIS WERE NOT UNIFORM. IN THE MAJORITY OF CASES THIS PHENOMENON TOOK PLACE WITHIN TWO HOURS. BUT THERE WAS A MINORITY OF CASES WHICH SHOWED A LIGHT DEGREE OF HEMOLYSIS EVEN AFTER 24 HOURS. THE TIME AND DEGREE HAS SOME CLINICAL RELATIONSHIP TO THE DEGREE OF HEMATO-ALBUMINURIA IN THE PATIENT. TIME OF INITIAL EHMLYSIS WAS EARLIER IN PATIENTS WITH A MORE SERIOUS DEGREE OF EHMATOALBUMENURIA. IN CASES WHICH SHOWED LITTLE ALBUMINURIA THE HEMOLYSIS DID NOT TAKE PLACE UNTIL AFTER 24 HOURS, AND THE DEGREE IS NOT AS GREAT. THIS, PERHAPS, IS RELATED TO THE NUMBER OF ABNORMAL RED BLOOD CELLS.

WITH REGARD TO THE MECHANISM CAUSING HEMOLYSIS IN THE BLOOD OF THESE PATIENTS, THE EXPERTS HAVE DIFFERENT POINTS OF VIEW. AT THE PRESENT TIME, THE GREAT MAJORITY OF EXPERTS BELIEVE THAT THIS IS DUE TO ABNORMALITIES IN THE HEMATOCYTES THEMSELVES; AT THE SAME TIME, THERE MUST BE SOME BLOOD SERUM FACTOR INVOLVED.

HEGLIN AND MAIER SUGGEST THAT DURING THE EXISTENCE OF REPLACEMENT ELEMENTS IN THE BLOOD PLASMA, THE HEMOLYTIC FACTOR IN THE BLOOD REACTS WITH SOME ELEMENT IN THE HEMATOCYTES, WHICH LEADS TO HEMOLYSIS. INCREASING THE TEMPERATURE OR LOWERING THE PH FACTOR OF THE BLOOD PLASMA INTENSIFIES HEMOLYSIS. THIS, THEN, WOULD BE THE THEORETICAL BASIS FOR OUR TEST. THESE TWO AUTHORS ALSO POINT OUT THAT AT 37°C CONSTANT TEMPERATURE, THE APPEARANCE OF HEMOLYSIS WITHIN SIX HOURS IS VERY MEANINGFUL TOWARDS DIAGNOSING THIS DISEASE.

WE TOOK A FURTHER STEP IN ADDING NORMAL BLOOD PLASMA TO THE RED CELLS OF THE SPORADIC SOMNOLENT EHMATOALBUMINURIA PATIENTS (AFTER HAVING BEEN RINSED IN NORMAL SALINE), AND IN ADDING THE PLASMA OF THESE PATIENTS TO NORMAL RED BLOOD CELLS. THESE WERE PLACED SEPARATELY IN THE 37°C INCUBATORS FOR OBSERVATIONS (TWO SPECIMENS EACH).

TEST RESULTS SHOWED THERE WAS CLEAR HEMOLYSIS IN THE SPECIMENS OF NORMAL BLOOD PLASMA ADDED TO THE BUFFERER'S BLOOD CELLS AFTER SIX HOURS. BUT IN THE LATTER CASES, THERE WAS NO HEMOLYSIS. THESE RESULTS COINCIDE CLOSER WITH THE THEORY THAT THE HEMOLYTIC MECHANISM IS MAINLY CAUSED BY ABNORMALITIES IN THE HEMATOCYTES THEMSELVES.

ACCORDING TO HEGLIN AND MAIER'S ORIGINAL METHOD, 5CC OF BLOOD WAS REQUIRED. WE UTILIZED DIFFERENT AMOUNTS OF BLOOD (5CC, 2-2.5CC, AND 1CC) AND DIFFERENT SIZED TEST TUBES (1.4 X 60, 1.2 X 10, 1.0 X 8MM) IN CARRYING OUT OUR TESTS, AND DISCOVERED IDENTICAL RESULTS, THEREFORE WE REDUCED BLOOD SPECIMENS TO 1.0 CC. (MANUSCRIPT RECEIVED 28 SEPTEMBER 1962).

CLINICAL MEANING IN THE USE OF INITIAL REPORT ON BLOOD SERUM LEUCINE AMINOPEPTIDASE ACTIVITY DETERMINATIONS IN DISEASES OF THE HEPATO-BILIARY, AND PANCREATICS SYSTEMS: BY YANG YUNG-CHANG (2799 3057 1757), WANG TSAN-SHUN (3769 6363 5293), LIU TSE-MIN (0491 3419 3046),

AND CHU WU-NAN (2612 3541 7181), INTERNAL MEDICINE TEACHING RESEARCH DIVISION, CHUNSHAN HOSPITAL, SUBSIDIARY TO THE FIRST SHANGHAI MEDICAL COLLEGE; p. 381-2.

LEUCINE AMINOPEPTIDASE (LAP FOR SHORT) IS ONE OF THE ALBUMINOLYSINS. IT IS CONTAINED IN ABUNDANT AMOUNTS IN THE LIVER, PANCREAS, KIDNEY AND SMALL INTESTINES. ITS PRESENCE CAN BE DETERMINED IN BLOOD SERUM, URINE, FECES, GALL AND DUODENAL FLUIDS. IN DISEASES OF THE PANCREAS, THE HEPATO-BILIARY SYSTEMS, SERUM-LAP ACTIVITY IS LIKELY TO INCREASE. IT IS USEFUL IN CANCER DIAGNOSIS AND DIFFERENTIAL DIAGNOSIS OF YELLOW JAUNDICE. DOMESTIC REPORTS ON SUCH ACTIVITY DETERMINATIONS HAVE YET TO BE SEEN. WE HEREBY PRESENT A REPORT OF OUR INITIAL OBSERVATIONS.

PSEUDOMEMBRANOUS & STREPTOCOCCUS AUREOLEAL ENTEROCOLITIS -- ANALYSIS OF 21 CASES: BY HUANG MING-CHOU (7806 2494 3166), YANG T'ING-FANG (2799 1656 5364), AND CHU LI-LI (2612 5461 5461), FROM THE INTERNAL MEDICINE DEPARTMENT OF THE HUAINAN MINERS' HOSPITAL; LIU JUNG-CHUANG (2692 2837 5445) AND CH'EN SHAO-CHUN (7115 1421 0971) FROM THE INTERNAL MEDICINE DEPARTMENT OF THE 441ST PEOPLE'S LIBERATION ARMY HOSPITAL; WANG CH'IN-HUAN (3769 0530 1403) OF THE FIRST SUBSIDIARY HOSPITAL OF THE PEIPING MEDICAL COLLEGE; CHIN HUI-MIN (6855 1920 3046), YU WAN-HSIANG (1429 1238 7449), AND LU WEN-CHUN (0712 2429 6874), FROM THE INTERNAL MEDICINE DEPARTMENT OF PEIPING'S TEMPLE OF HEAVEN HOSPITAL; CHAO HSIANG-YIN (6392 4161 0603), CH'ENG WEI-LU (4452 4850 7627), AND KUNG CHIA-CHEN (7895 1367 6966), OF THE PEIPING T(UNG JEN HOSPITAL; WEN TSAN-MING (3306 6363 6900) FROM THE BASIC SURGICAL DEPARTMENT OF THE GENERAL PEOPLE'S LIBERATION ARMY HOSPITAL; LI I-FANG (2621 5030 2455) OF THE COMMUNICABLE DISEASES DEPARTMENT OF THE FIRST SUBSIDIARY HOSPITAL, SIAN MEDICAL COLLEGE; CHIANG PO-CHIUNG (5592 0130 3890) FROM THE INTERNAL MEDICINE DEPARTMENT OF THE SINO-SOVIET AMITY HOSPITAL; P'AN CH'I-YING (3382 0366 5391) FROM THE INTERNAL MEDICINE DEPARTMENT OF THE PEIPING UNION MEDICAL COLLEGE; AND LI CHIEH-YING (2621 3381 5391) FROM THE SURGICAL DEPARTMENT OF THE CHUNG-SHAN SUBSIDIARY HOSPITAL OF THE FIRST SHANGHAI MEDICAL COLLEGE; ORDER IN WHICH THESE NAMES ARE LISTED IS ACCORDING TO THE TIME OF ARRIVAL OF THEIR MANUSCRIPTS; DIGESTED BY THE EDITORIAL COMMITTEE OF THIS JOURNAL; pp. 383-6.

THE EDITORIAL COMMITTEE OF THIS JOURNAL HAS RECEIVED MANY ARTICLES ON THIS SUBJECT. IN ORDER TO BE BETTER ABLE TO REPORT ON THE SUBJECT, WE HAVE ALSO COLLECTED CERTAIN CASE HISTORIES SINCE 1958 FROM DOMESTIC HOSPITALS, TOTALLING 21 IN ALL.

SUMMARY: THIS ARTICLE SUMMARIZED 21 CASES OF PSEUDOMEMBRANOUS & STREPTOCOCCUS AUREOLEAL ENTEROCOLITIS. IT CARRIES OUT INITIAL DISCUSSION ON THE CAUSES, CLINICAL SYMPTOMS, LABORATORY RESULTS, AND TREATMENT OF THE DISEASES. FURTHERMORE IT STRESSES THE ACUTENESS OF THE ONSET, AS WELL AS THE SERIOUSNESS OF THE SYMPTOMS, OFFERING THE

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SUGGESTION THAT THERE SHOULD BE EARLY DIAGNOSIS AND SPEEDY ADOPTION OF EFFECTIVE TREATMENT METHODS. (WRITE-UP BY CHAO HSIANG-YIN, CH'ENG WEI-LU, AND KUNG CHIA-CHEN /SEE ABOVE/).

INSULIN-GLUCOSE TREATMENT OF LINGERING & CHRONIC HEPATITIS: By YANG K'UN-MING (2799 2492 2494), Hsu CHIAO-MING (1776 5128 2494), CHIN WEN-T'AO (6855 0795 3447), AND TAI TZU-YING (2071 5261 5391), FROM THE COMMUNICABLE DISEASES TEACHING RESEARCH DIVISION OF THE FIRST SHANGHAI MEDICAL COLLEGE; pp.387-390.

THE COURSES OF LINGERING AND CHRONIC HEPATITIS ARE RELATIVELY ENDURING. THE AMINASE LEVEL IN THE SERA OF A NUMBER OF THE CASES REMAINED AT A HIGH LEVEL. DESPITE MANY METHODS OF TREATMENT, THERE WAS NO RELIEF IN THIS SYMPTOM.

SINCE 1961, WE HAVE BEEN USING HSIENT-WANG-CHI, IUG, TESTOSTERONE PROPIONATE, ZINC SULFATE (?), CORTICOTROPIN, OR CORT.CCLODS, ETC. IN TREATING 120 CASES OF LINGERING AND CHRONIC HEPATITIS ACCOMPANIED BY HIGH LEVEL OF SERUM AMINASE. THE EFFICACY LEFT MUCH TO BE DESIRED.

BETWEEN DECEMBER 1961 AND APRIL 1962, WE ALSO USED THE INSULIN-GLUCOSE TREATMENT ON 30 CASES OF THIS DISEASE. THE TREATMENT EFFICIENCY WAS MUCH BETTER THAN ANY OF THE ABOVEMENTIONED METHODS.

SUMMARY: THIS ARTICLE REPORTS ON THE RESULTS OF THE INSULIN-GLUCOSE TREATMENT FOR 30 CASES OF LINGERING AND CHRONIC HEPATITIS. PRIOR TO TREATMENT, THE SERUM AMINASE HAD REMAINED AT A HIGH LEVEL CONTINUOUSLY FOR BETWEEN 3-28 MONTHS. UPON COMPLETION OF THE TREATMENT THERE WAS NOTICEABLE IMPROVEMENT IN THE PATIENTS, ACCCOMPANIED BY INCREASE IN BODY WEIGHT. IN 22 CASES, THERE WAS RECURRENCE OF HEIGHTENING SERUM AMINASE LEVEL; WHILE IN THE OTHER 15, THE LEVEL REMAINED NORMAL, ONE YEAR AFTER TREATMENT. EFFICACY WAS BY FAR BETTER THAN THE CONTROL GROUP.

INITIAL DISCUSSIONS WERE CARRIED OUT ON THE MECHANISM IN THE TREATMENT WITH INSULIN-GLUCOSE.

REPORT ON A CASE OF PERNICIOUS DYSENTERIC MALARIA: By HUANG JUI-SHANG (7506 6904 1424), 157TH LIBERATION HOSPITAL; p.390.

PATIENT, MALE 40, CADRE, COMPLAINED OF STOMACH PAINS AND FECAL BLOOD, TWO DAYS IN DURATION. TIRED, LOOSE BOWELS. FELT SEVERE COLD, LOW BODY TEMPERATURE, HEADACHE, NAUSEA, PERSPIRED, STOMACH PAINS NEXT DAY; 5-6 BOWEL MOVEMENTS. FECAL EXCRETION CONTAINED BLOOD, MUCOUS, AND PUS MATTER. PAST HISTORY: "DYSENTERY 18 YEARS PREVIOUS; MALARIA 10 YEARS PREVIOUS,

HOSPITAL EXAMINATION SHOWED NORMAL TEMPERATURE AND PULSE, B.P. 95/55, CLEAR-HEADED, MEDIUM NUTRITION. NO HEART OR LUNG ABNORMALITIES. HYPERISTALSIS. WBC: 14,800, NEUTROPHIL CELLS 71%, BLOOD PLATELETS 190,000. BLEEDING TIME: 2 MIN., COAGULATION TIME: 1 MIN., BLOOD SEDIMENTATION 4MM, END OF ONE HOUR. MALARIAL ORGANISMS WERE SEEN IN

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PERIPHERAL BLOOD SLIDES. MICROSCOPIC EXAMINATION OF FECES SHOWED RBC: +++, WBC: ++; FECAL BLOOD SLIDE EXAMINATION SHOWED MALIGNANT MALARIAL ORGANISMS; POSITIVE TO AMOEBOIC ORGANISMS. FECAL CULTURE YIELDED NO B. DYSENTERIC. NORMAL LIVER FUNCTION TEST.

TREATMENT: UPON ENTRY INTO HOSPITAL, PATIENT GIVEN ONE INTRAMUSCULAR INJECTION OF 0.2GM A-TI-PING PER DAY; TOTAL FIVE DAYS. THREE DAILY DOSES OF 0.1GM OF PAI-LO-CHUN\*; TOTAL 10 DAYS. THREE DAYS AFTER TREATMENT BOWEL MOVEMENTS REDUCED TO TWO PER DAY. ON THE FOURTH DAY THERE WERE MINUTE AMOUNTS OF HEMATOCYTES IN FECAL EXCRETION. SYMPTOMS DISAPPEARED ON THE FIFTH DAY. PATIENT LEFT HOSPITAL AFTER CONVALESCENCE. (SEE CHINESE JOURNAL OF NEW MEDICINE, 2:3, 1951; MANUSCRIPT RECEIVED 26 NOVEMBER 1962.)

BIOPSY & CLINICAL ANALYSIS OF NON-JAUNDICIAL INFECTIOUS HEPATITIS: By WANG CH'UAN (3769 2938) AND LI PANG-CH'I (2621 6721 3823) OF THE PEIPING UNION MEDICAL COLLEGE, INTERNAL MEDICINE DEPARTMENT, CHINESE COLLEGE OF MEDICAL SCIENCES; AND T'ING LIEN (0002 3425) FROM THE DEPARTMENT OF PATHOLOGY, INSTITUTE OF EXPERIMENTAL MEDICINE, CHINESE COLLEGE OF MEDICAL SCIENCES; PP. 391-4.

SUMMARY: BETWEEN MARCH 1960 AND JANUARY 1961, THIS HOSPITAL CARRIED OUT HEPATIC PUNCTURE BIOPSY EXAMINATIONS ON 230 OUT-PATIENTS SUSPECTED OF HEPATITIS. IN ORDER TO ELIMINATE NON-SPECIFIC REACTIONED HEPATITIS AND CASES CAUSED BY HISTOLOGICAL CHANGES IN THE LIVER BY CERTAIN DRUGS, WE OMITTED DATA FROM 69 CASES WHICH HAD ACCOMPANYING DISEASES OR PATIENTS WHO HAD BEEN TAKING NICOTINE-HYDRAZINE, PARA-AMINOSALICYLICACID, PHENYL-BUTAZONE, AND "PAO-T'AI-BUNG", ETC. WE CARRIED OUT ANALYSIS ON THE OTHER 161 CASES WITH RESPECT TO THEIR CLINICAL MANIFESTATIONS AND PATHOLOGICAL OBSERVATIONS.

AMONG THESE CASES, 87.6% WERE CLEARLY DIAGNOSED AS NON-JAUNDICIAL HEPATITIS, AND 3.1% OTHER DISEASES (2 CASES OF HEPATIC TUBERULOSIS, AND ONE CASE EACH OF FATTY LIVER, DUBIN-JOHNSON SYNDROME, AND SCLEROSIS OF THE BONE MARROW), AS WELL AS 9.3% OF THE CASES FOR WHICH DEFINITIVE DIAGNOSIS WAS NOT POSSIBLE. TOWARDS THESE LATTER CASES, THIS ARTICLE DISCUSSED POSSIBLE DIAGNOSES.

THE ARTICLE ALSO CARRIES OUT DISCUSSIONS ON DIAGNOSTIC PROBLEMS OF NON-JAUNDICIAL HEPATITIS.

CONCOMITTANT PERFORATION IN AMEBIC ABSCESS OF THE LIVER: BY MENG HSIEH-YUNG (1322 2009 6978), AND CH'IEN T'UNG-SUN (6929 2717 5549), FROM THE TEACHING RESEARCH DIVISION, INTERNAL MEDICINE DEPARTMENT, NANTUNG MEDICAL COLLEGE; PP. 395-9.

THIS ARTICLE ANALYSES CASES OF PERFORATION ACCOMPANYING AMEBIC ABSCESS OF THE LIVER. IT ALSO SUMMARIZED AVAILABLE LITERATURE CONCERNING DIAGNOSIS AND TREATMENT, AS WELL AS PROGNOSIS PROBLEMS.

INCIDENCE: BETWEEN 1955 AND OCTOBER 1962, THIS HOSPITAL ADMITTED 239 CASES OF AMEBIC ABSCESS OF THE LIVER. AMONG THESE, THERE WERE 74 CASES (30.9%) WHICH WERE ACCCOMPANIED BY PERFORATION.

\* Atabrine ?

C-O-N-F-I-D-E-N-T-I-A-L

THE ANTIFEBRIL AND SIDE EFFECTS OF "PAO-T'AI-SUNG" IN THE TREATMENT OF ACUTE BLOOD SUCKER DISEASES: BY CHU YUNG-CH'ANG (2612 3057 2490), LI LEI-SHIH (7812 4320 4258), FENG LING-YUN (7685 3249 0061), AND YANG I-CH'ING (2799 5030 1096), FROM THE DEPARTMENT OF TROPICAL MEDICINE, 86TH LIBERATION ARMY HOSPITAL; PP. 400-02.

THERE HAS ALREADY BEEN LITERATURE THAT REPORTED ON THE STRONG ANTIFEBRIL EFFECTS OF THIS DRUG ON THE TREATMENT OF ACUTE BLOOD SUCKER DISEASES. FURTHERMORE, THE DRUG DID NOT HAVE ANY SERIOUS SIDE EFFECTS. WE MADE VERY DETAILED OBSERVATIONS ON 38 CASES OF PATIENTS SUFFERING FROM THESE DISEASES, AND PROVED THAT THE DRUG DOES HAVE CLEARLY VISIBLE ANTIFEBRIL EFFECTS. HOWEVER, THERE WERE QUITE A FEW SIDE EFFECTS, AS WELL AS THE APPEARANCE OF ALIMENTARY BLEEDING AND DISTURBANCES OF THE ELECTROLYTIC MATTER. SPECIAL ATTENTION SHOULD BE DIRECTED TOWARDS THESE.

ANALYSIS OF 118 CASES OF ACUTE DIMETHYL SULFATE POISONING: BY LIU SU-HU (0491 4790 1969), HUANG SUNG-CHANG (7806 2646 4545), LI YUNG-PIN (2621 3057 1755), AND YEH TSU-YUN (5509 4371 5366), INTERNAL MEDICINE DEPARTMENT OF THE SHANGHAI MUNICIPAL SECOND PEOPLE'S HOSPITAL; PP. 403-4.

ON 5 NOVEMBER 1959, WHILE TRANSSHIPPING OF DIMETHYL SULFATE WAS CARRIED OUT ON A DOCK CLOSE TO THIS HOSPITAL, ONE BARREL WAS CRUSHED. THE FLUID LEAKED THROUGH THE CRACKS AND EVAPORATED INTO THE ATMOSPHERE. AN ACCIDENTAL CASE OF POISONING BY THIS CHEMICAL, IN WHICH, EVENTUALLY 118 PATIENTS CAME FOR TREATMENT. PATIENTS WERE ALL DISCHARGED AFTER THEY HAD BEEN TREATED SUCCESSFULLY. AN ANALYTICAL REPORT IS PRESENTED HEREINUNDER.

CAUSING DIFFERENCES IN THE SERIOUSNESS OF THE SICKNESS IN VARIOUS PATIENTS ARE FACTORS WHICH HAVE SOME RELATIONSHIP TO THE FOLLOWING: (1) ATMOSPHERIC PRESSURE: THE DAY WAS CLOUDY AND RAINY, LOW ATMOSPHERIC PRESSURE. ALTHOUGH GROUND WAS TREATED REPEATEDLY WITH LIQUOR AMMONIA, AIR CONCENTRATION OF THIS CHEMICAL, THREE DAYS LATER, WAS STILL 0.0016 ML/LITER. (SPECIMENS WERE NOT TAKEN ON THE FIRST AND SECOND DAYS).

(2) WIND DIRECTION: BASED UPON INVESTIGATION WITHIN A 20 METER DIAMETER, 30 AMONG 39 LEeward INHABITANTS WERE AFFECTED. A GROUP OF 17 WORKMEN FROM THE CARGO HANDLING UNIT WORKING BACK AND FORTH IN THE WAKE OF THE WIND WERE ENTIRELY AFFECTED. AMONG 12 VEGETABLE SHIPPERS, SEVEN WERE WORKING LEWARD; ALL SEVEN WERE AFFECTED. THE FIVE WORKING ON THE OTHER SIDE WERE NOT AFFECTED. ALL OTHER PATIENTS HAD PASSED BY IN THE LEWARD AREA.

(3) DISTANCE AND CONTACT TIME: THOSE WHO HAD DIRECT CONTACT WITH THE CHEMICAL SUFFERED BURNS IN THE ANKLES AND LOWER EXTREMITY SKIN AREAS. THREE TRUCK DRIVERS STANDING WITHIN A FEW FEET WERE SEVERELY POISONED. A MESS HALL SITUATED 10-ODD METERS AWAY, HAD EIGHT KITCHEN HELP WHO HAD RELATIVELY LONG TIME CONTACT WITH THE FUMES. THEY WERE ALSO SEVERELY POISONED.

C-O-N-F-I-D-E-N-T-I-A-L

OUTSIDE THE 20 METER DIAMETER, EVEN IN THE WINDWARD DIRECTION,  
EXCEPT FOR THOSE WHO WERE ACTIVE WITHIN THE EVAPORATION AREA, NO ONE  
WAS POISONED.

CLINICAL ANALYSIS:

TABLE: SYMPTOMS & BODY APPEARANCE OF 118 PATIENTS AFFECTED BY  
DIMETHYL SULFATE POISONING.

DISCUSSION:

POISONOUS PLANT TOXICOSIS: BY CHANG YU-HSUEN (1728 5148 6513), PP.410-413

THE INDISCRIMINATE USE OF POISONOUS PLANTS IN THE TREATMENT OF DISEASES IS OFTEN REPEATED IN MEDICAL LITERATURE. CARELESS EATING OF GINKGO SEEDS, BITTER ALMONDS, CASTOR BEANS, MAN-T' UO-LO (DATURA ALBA), AND MA-SANG (CORIARIA JAPONICA) IS ALSO BEEN SCATTERED IN OUR LITERATURE.

BESIDES, IMPROPERLY PREPARED PLANT-FOODS CAN ALSO CAUSE POISONING, WHICH IS OCCASIONALLY SEEN. WE ARE SUMMARIZING DOMESTIC MEDICAL LITERATURE HEREINUNDER, ON THE TOXICITY, POISON CHARACTERISTICS, AND TREATMENT OF POISONOUS PLANT TOXICOSIS.

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DISCUSSION OF TREATMENT EFFICACY OF "HAI-CHUN-SHENG" ON SUDDEN ACIDOPHILIC ASTHMA (A CONDENSATION): BY P'ENG CHI-FAN (1756 4949 4907), SHIN SHU-CHEN (8963 3276 3781), AND HUANG SHIH-YUAN (7860 0013 3057), P. 413.

THIS ARTICLE DISCUSSES 41 CASES OF THIS DISEASE, WHICH TOOK PLACE IN A CERTAIN WORKSHOP WITHIN THE SAME UNIT OF A CERTAIN MINE IN KE-CHIU, YUNNAN, BETWEEN 28 JUNE AND 22 JULY 1962. LOTS WERE DRAWN TO DETERMINE ORDER IN WHICH THIS DRUG WAS GIVEN IN TREATMENT.

ACCORDING TO OUR CLASSIFICATION, ASIDE FROM ONE CASE WHO ORIGINALLY WAS SUFFERING FROM BRONCHIAL ASTHMA, AND ASIDE FROM ONE CASE WHERE THE DOSAGE LED TO SEVERE STOMACH PAINS AND WAS DISCONTINUED, 21 CASES WERE GIVEN THIS DRUG, WHILE 18 CASES WERE USED AS CONTROL.

THE DIAGNOSES FOR ALL CASES WERE ACCORDING TO STANDARDS SET IN A PREVIOUS ARTICLE (SEE CHINESE JOURNAL OF INTERNAL MEDICINE, VOL.X, P. 478, 1962). BOTH GROUPS HAD COUGHING AND HARDNESS OF BREATH. IN THE DOSED GROUP, 21 CASES HAD DRY, RASPING BREATH, SIX CASES HAD WET COUGHS. IN THE CONTROL GROUP THE FIGURES WERE 16 AND 6.

TOTAL LEUCOCYTE AND ACIDOPHILIC COUNTS WERE SIMILAR IN BOTH GROUPS. URINE ANALYSES SHOWED SIMILAR CONDITIONS IN BOTH GROUPS. EYE EXAMINATION, AND KAHN-TEST ON A PORTION IN BOTH GROUPS, COLD AGGLUTINATION TESTS, LIVER FUNCTION TESTS, SERUM SODIUM, POTASSIUM, AND CHLORIDE CONTENT TESTS, WERE ALL NORMAL. BLOOD PRECIPITATION, CHEST X-RAY, ROUTINE FECAL EXAMINATIONS, HAD NORMAL DISTRIBUTION OF POSITIVE REACTION CASES.

THE DOSAGE OF THE DRUG WAS THREE TIMES A DAY, 200MG PER DOSE. EACH COURSE OF TREATMENT WAS SEVEN DAYS. AMONG THE 21 CASES, 16 CASES TOOK TWO COURSES (SEPARATED BY THREE DAY INTERVAL), WHILE FIVE CASES TOOK ONLY ONE COURSE.

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TREATMENT WAS GIVEN BETWEEN THE THIRD AND ELEVENTH DAYS, THE AVERAGE BEING 7.3 DAYS. THE CONTROL GROUP WAS GIVEN VITAMINS. COUGH-QUIETING DOSAGES WERE ALSO GIVEN TO BOTH GROUPS.

IN GENERAL, EVERY OTHER DAY, THERE WOULD BE A DESIGNATED PERSON WHO WOULD TAKE DOWN DEVELOPMENTS IN THEIR SICKNESS. BLOOD EXAMINATIONS WERE ALSO GIVEN. THE PATIENTS ENTERED THE HOSPITAL BETWEEN 4 AND 22 JULY. WHEN OBSERVATION WAS COMPLETED THE ENTIRE GROUP OF PATIENTS LEFT THE HOSPITAL ON AUGUST 3.

TREATMENT OBSERVATION: COMPARISON OF TIME TAKEN FOR DISAPPEARANCE OF SYMPTOMS, SUCH AS COUGHING, HARDNESS OF BREATH, LUNG RASPS, WET RASPBINGS:- (ACCORDING TO THE ORDER IN WHICH THESE SYMPTOMS DISAPPEARED), 17.2 DAYS (18 CASES); 17.5 (16); 12.9 (16); 17.8 (4). IN THE CONTROL GROUP, THE FIGURES WERE 17.9 DAYS (14 CASES); 17.2 (15); 11.1 (16), AND 11.0 (5). THERE WAS NO NOTICEABLE DIFFERENCE BETWEEN THE TWO GROUPS. (SINCE BOTH GROUPS WERE GIVEN COUGH MEDICINE, PERHAPS THIS FACT INFLUENCED FIGURES FOR BOTH GROUPS WITH RESPECT TO COUGHING).

BLOOD PICTURE: THERE IS NO NOTICEABLE DIFFERENCE DURING THE ENTIRE COURSE OF THE ILLNESSES BETWEEN THE TWO GROUPS IN THEIR ACIDOPHILOCYTE COUNT. IN THEIR WBC COUNT, HOWEVER, THE CONTROL GROUP AT ONE TIME DID HAVE A HIGHER COUNT THAN THE TREATED GROUP. BUT AFTER THE FOURTH WEEK, THERE WAS A GRADUAL TENDENCY TOWARDS SIMILARITY IN THIS BETWEEN THE TWO GROUPS. NORMALCY WAS EVENTUALLY ATTAINED.

CONCLUSIONS: THERE IS NO EFFICACY OF THIS DRUG TOWARDS THE PRINCIPAL SYMPTOMS MENTIONED IN THIS ARTICLE, VIS. COUGHING, HARDNESS OF BREATH, LUNG RASP, AND WET RASPS. THE EFFECT ON THE NORMALCY OF THE BLOOD PICTURE IS ALSO NOT TOO CLEAR. ALTHOUGH THE EFFICACY OF THIS DRUG ON ASCARIS AND FILIARIS HAD BEEN DETERMINED, THE RESULTS SHOWN IN THIS ARTICLE DID NOT COINCIDE WITH THOSE IN OTHER DOMESTIC LITERATURE. THIS MEANS THAT ASCARIS AND FILIARIS INFECTION HAS NO RELATIONSHIP WITH THE CASES MENTIONED HEREIN.

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SIX CASES OF "HEIGHT"\*SICKNESS : BY LIN CHI-CHUNG (2651 3444 0022), DEPARTMENT OF INTERNAL MEDICINE, HEIHO SPECIAL ADMINISTRATIVE DISTRICT HOSPITAL, TIBET, P. 417.

ASCENDING HEIGHTS IN A RELATIVELY SHORT TIME LEADS TO "HEIGHT" SICKNESS DUE TO DIZZINESS AND LOSS OF CONSCIOUSNESS. THERE IS AS YET VERY LITTLE LITERATURE ON THIS SUBJECT IN THIS COUNTRY.

THIS HOSPITAL IS SITUATED ON THE NORTH TIBETAN PLATEAU. PASSERBY COMING TO US WITH THIS SICKNESS ARE NOT TOO RARE. BUT THERE ARE NOT TOO MANY WITH SERIOUS SYMPTOMS -- "HEIGHT" LOSS OF CONSCIOUSNESS. WE REPORT HERE SIX CASES OF RESPIRATORY ALKALINOSIS, ACCCOMPANIED BY LOSS OF CONSCIOUSNESS AND HYDROPS PULMONARIS, FOR THE REFERENCE OF THOSE MEDICAL WORKERS WORKING AMONG PLATEAU AREAS:-

CASE 1: PATIENT KAO, MALE, 28, LABORER, NATIVE OF SZECHUAN. ENTERED HOSPITAL AFTER FOUR HOURS OF COMA, THROUGH THE EMERGENCY CLINIC.

\* ["Height" sickness = mountain sickness.]

C-O-N-F-I-D-E-N-T-I-A-L

PATIENT WAS TRAVELLING BY BUS FROM LHASA ON HIS WAY TO THE INTERIOR. EN-ROUTE HE FELT A HEADACHE, DIZZINESS, AND NAUSEA. HE WAS DISTURBED MENTALLY, AND STARTED TEARING HIS OWN CLOTHES. AFTER TWO HOURS, FELLOW TRAVELLERS NOTICED THAT HE BECAME QUIETER, WITH HIS EYES HALF CLOSED. HE DID NOT REPLY WHEN HE WAS CALLED. HIS LIPS BECAME PURPLE AND HIS EXTREMITIES TURNED COLD.

EXAMINATION: BODY TEMPERATURE UPON ENTRY TO THE HOSPITAL WAS  $36.5^{\circ}$ , PULSE 80, B.P. 80/70. HE WAS NOT CLEAR-HEADED. HIS LIPS AND FINGERS WERE EXTREMELY PURPLE. HE HAD SHALLOW RESPIRATION AND HIS PUPILS WERE SLIGHTLY ENLARGED, FOCUS REACTION WAS GOOD. NO ABNORMALITIES OF THE HEART, LUNGS, AND STOMACH. EXAMINATION OF THE NERVOUS SYSTEM SHOWED NO SYMPTOMS. CARBON DIOXIDE FORMATION RATE WAS 30 VOL%.

HE WAS GIVEN OXYGEN IMMEDIATELY AND INJECTED INTRAVENOUSLY WITH GINGER-GLUCOSE AND AMINOPHYLLINE. AFTER 40 MINUTES OF OXYGEN TREATMENT, THE PATIENT REGAINED FULL CONSCIOUSNESS, THE PURPLE COLOR DISAPPEARED.

HE WAS ASKED ABOUT PAST HISTORY AFTER REGAINING CONSCIOUSNESS. PATIENT WAS RAISED IN SZECHUAN AND CAME TO TIBET WHEN HE WAS 19. NEVER HAS HE HAD DIZZINESS OR LOSS OF CONSCIOUSNESS BEFORE.

CASE 2: PATIENT TS'AI, MALE, AGE 24, CADRE, BORN IN HONAN. LOSS OF CONSCIOUSNESS FOR TWO HOURS CAUSED HIM TO BE SENT TO THE HOSPITAL. HE HAD COME TO TIBET BY BUS FROM THE INTERIOR. WHEN HE PASSED THROUGH THE T'ANG-KU-SHAN HE FELT A HEADACHE, A TENSE FEELING IN HIS CHEST, VOMITED, LOST APPETITE AND STARTED MUMBLING. UPON ARRIVING IN HEI-HO, HE LOST CONSCIOUSNESS.

EXAMINATION UPON ENTERING HOSPITAL: BODY TEMPERATURE  $38^{\circ}\text{C}$ , B.P. 70/60, PUPILS NORMAL, EXCELLENT FOCUS REACTION, LIPS PURPLE. NO ABNORMALITIES IN HEART, LUNGS, STOMACH, AND NERVOUS SYSTEM. NORMAL FINDINGS IN BLOOD AND SPINAL FLUID TESTS. CO<sub>2</sub> FORMATION 31.1 VOL%.

PATIENT WAS GIVEN OXYGEN UPON ENTERING HOSPITAL, AS WELL AS GINGER-GLUCOSE AND AMINOPHYLLINE INJECTIONS (INTRAVENOUS). AFTER THREE HOURS, PATIENT REGAINED FULL CONSCIOUSNESS AND WAS ABLE TO WALK. NO PREVIOUS HISTORY OF LOSS OF CONSCIOUSNESS.

CASE 3: CHO-MA, FEMALE, AGE 26, CADRE, TIBETAN RACE FROM CHING-HAI. ENTERED HOSPITAL AFTER ONE DAY OF DROWSINESS. PATIENT HAD JUST ARRIVED IN TIBET FROM CHINGHAI. FIRST TWO DAYS AFTER ARRIVAL IN HEI-HO, FELT HEADACHE, STOMACH PAINS, AND UNEASINESS IN THE CHEST. THIRD DAY WANTED TO SLEEP, COMPLAINED OF DIZZINESS, AND CANNOT GET UP FROM BED. GRADUAL LOSS OF CONSCIOUSNESS, WHEN CALLED COULD ONLY NOD HEAD. AT ONSET DID NOT HAVE FEVER OR FEEL COLD.

EXAMINATION UPON ENTERING HOSPITAL: BODY TEMPERATURE  $37^{\circ}\text{C}$ , PULSE 85, B.P. 80/60, SEMI-CONSCIOUS, LIGHT PURPLE LIPS, NORMAL PUPILS. LOOSE NECK; HEART, LUNGS, ABDOMEN, AND NERVOUS SYSTEMS NEGATIVE FINDINGS. NORMAL SPINAL FLUID TEST. CO<sub>2</sub> FORMATION 29.1 VOL%.

OXYGEN WAS ADMINISTERED BOTH THROUGH NOSE AND SUBCUTANEOUSLY, TWICE DAILY, EACH TIME 100ML. UPON TREATMENT APPEARANCE IMPROVED. DISCHARGED, NO PREVIOUS SYMPTOMATIC HISTORY.

C-O-N-F-I-D-E-N-T-I-A-L

CASE 4: PATIENT CHANG, FEMALE, AGE 32, CADRE, NATIVE OF HOPEI ENTERED HOSPITAL ONE DAY AFTER FEELING BELOW NORMAL IN CLARITY OF MIND AND WANTING TO SLEEP. PATIENT CAME TO TIBET FROM HOPEI TO VISIT RELATIVES. WHEN PASSING THROUGH T'ANG-KU-SHAN, DISCOVERED SHE HAD HEADACHE, NAUSEA AND RESPIRATORY DIFFICULTIES. FELLOW TRAVELLERS DISCOVERED HER FACE TO HAVE BECOME WHITE, SHE LACKED STRENGTH AND CLARITY OF MIND, BECAME SEMICONSCIOUS. SENT TO THIS HOSPITAL FOR TREATMENT.

EXAMINATION: TEMPERATURE  $36.5^{\circ}\text{C}$ , B.P. 90/60, SUBCONSCIOUS STATE, FACE PALE, LIPS AND MOUTH SLIGHTLY PURPLE. LOOSENESS IN NECK, SLIGHT RASP IN BOTH LUNGS. NORMAL HEART AND ABDOMEN. ROUTINE BLOOD TEST, NEGATIVE.

ADMINISTERED OXYGEN AND INTRAVENOUS INJECTION OF GINSING-GLUCOSE SOLUTION. NO IMPROVEMENT. AROUND MIDNIGHT, CONSCIOUSNESS ENTIRELY LOST (AT THE COLDEST PART OF THE NIGHT). PUPILS SLIGHTLY ENLARGED, SHALLOW RESPIRATION, MOVEMENT OF NARES. PURPLE COLOR OF LIPS GREW MORE SEVERE. WET RASP (MIDDLE GRADE) IN BOTH LUNGS. RETESTING OF BLOOD STILL SHOWED NO ABNORMAL SIGNS. NO RISE IN BODY TEMPERATURE, B.P. 60/?. DUE TO SERIOUSNESS OF ILLNESS WAS SENT TO LOWER ALTITUDES. UNFORTUNATELY, PATIENT DIED EN ROUTE.

CASE 5: PATIENT CH'EN, MALE, AGE 25, PEOPLE'S POLICE, NATIVE OF SZECHUAN. WALKED INTO HOSPITAL AFTER ONE DAY OF HEADACHE AND CHEST UNEASINESS. PATIENT HAD JUST RETURNED FROM THE INTERIOR AFTER ANNUAL LEAVE. EN ROUTE HE FELT HEADACHE, CHEST UNEASINESS, LABORED BREATHING, TIREDNESS, AND LOSS OF APPETITE. LOST INTEREST OF HIS SURROUNDINGS, BUT COULD STILL REPORT ON HIS SICKNESS AND SYMPTOMS.

EXAMINATION: BODY TEMPERATURE  $37.1^{\circ}\text{C}$ , B.P. 100/70, CLEARHEADED, BUT UNINTERESTED. SLIGHT RASP IN BASAL PORTIONS OF HIS LUNGS. NORMAL HEART AND ABDOMEN.

THE SAME NIGHT FOUND PATIENT TO HAVE LOST PARTIAL CONSCIOUSNESS, LIPS BECAME PURPLE. LUNGS HAD WET RASPS TO VARYING DEGREES. BODY TEMPERATURE DROPPED TO  $36^{\circ}\text{C}$ , B.P. 80/60. NORMAL ROUTINE BLOOD TEST. PATIENT WAS IMMEDIATELY GIVEN 100ML OF GLUCOSE (GINSING) AND AMINOPHYLINE INTRAVENOUSLY. INTERMITTENTLY, HE WAS GIVEN OXYGEN THROUGH THE NOSE AND SUBCUTANEOUSLY, 150 ML, TWICE DAILY. AFTER TWO DAYS HE IMPROVED SPIRITUALLY, AND RASPING DISAPPEARED GRADUALLY. AFTER ABOUT TWO WEEKS, HE LEFT HOSPITAL ENTIRELY CURED.

CASE 6: PATIENT CHAO, FEMALE, AGE 20, NATIVE OF SHANTUNG. ENTERED HOSPITAL THROUGH EMERGENCY CLINIC AFTER 3 HOURS OF LOSS OF CONSCIOUSNESS. WHEN SHE WAS PASSING THROUGH T'ANG-KU-SHAN, SHE VOMITTED TWICE, COMPLAINED ONLY OF HEADACHE, UNWELL, AND HEART FLUTTER. SHE WAS STILL CONSCIOUS WHEN SHE ARRIVED AT HEI-HO. SHE DID NOT HAVE SUPPER THAT EVENING. IN THE MIDDLE OF THE NIGHT HER HUSBAND DISCOVERED PARTIAL LOSS OF CONSCIOUSNESS, AND COULD NOT AWAKEN HER. SEND IMMEDIATELY TO HOSPITAL. HUSBAND SAID THAT SHE HAD NO PAST HISTORY OF UNCONSCIOUSNESS.

EXAMINATION: B.P. 110/90, BODY TEMPERATURE  $36.5^{\circ}\text{C}$ , UNCONSCIOUS, SLIGHT PURPLENESS OF LIPS, SLIGHT ENLARGEMENT OF PUPILS, FAIR FOCUS

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REACTION, HER EYES MOVING TO THE TWO SIDES FROM TIME TO TIME. NORMAL LUNGS, HEART NOT ENLARGED, RHYTHM NORMAL, NO MISCELLANEOUS MURMUR, RHYTHM 150/MIN. ROUTINE BLOOD AND SPINAL FLUID TESTS SHOWED NO ABNORMALITIES.

IMMEDIATE ADMINISTRATION OF OXYGEN AND INJECTION OF GINSENG-GLUCOSE SOLUTION. NO IMPROVEMENT, HEARTBEAT REMAINED AT 150. DIED EN ROUTE TO TRANSFER TO ELSEWHEREB.

WITH REGARD. TO THE ABOVEMENTIONED SIX CASES, FIRST THREE CASES WERE LOSS OF CONSCIOUSNESS ACCOMPANYING RESPIRATORY ALKALINOSIS. THE CO<sub>2</sub> FORMATION CAPACITIES WERE RESPECTIVELY 30, 31.1 AND 29.1 VOL%. UPON ADMINISTRATION OF OXYGEN ALL WERE SAVED. CASE NO.4 WAS "HEIGHT" UNCONSCIOUSNESS ACCOMPANYING ACUTE HYDROPS PULMONARIS. PATIENT DIED DESPITE OXYGEN TREATMENT.

CASE NO.5 WAS SIMILAR TO CASE NO.4, BUT TIMELY ADMINISTRATION OF OXYGEN BOTH THROUGH THE NOSE AND SUBCUTANEOUSLY SAVED THE PATIENT IN THE END. THE OVER RAPID BEATING OF THE HEART ACCOMPANYING THIS HEIGHT UNCONSCIOUSNESS IN CASE NO.6, COULD NOT BE CURED AND LED TO DEAD. THE REASON FOR DEATH COULD BE DUE TO OVERTAXING OF THE HEART.

THROUGH THE TREATMENT OF THESE SIX CASES, OUR INITIAL EXPERIENCE IS AS FOLLOWS:- (1) THERE MUST BE TIMELY EMERGENCY TREATMENT OF THE PATIENT, NO DELAY CAN BE TOLERATED. (2) ASIDE <sup>FROM</sup> NASAL ADMINISTRATION OF OXYGEN, SUBCUTANEOUS INJECTION MIGHT HEIGHTEN THE EFFECTS OF TREATMENT. CERTAIN EXPERTS, SUCH AS E.R. PHWEHBOH, BELIEVE THAT SUBCUTANEOUS INJECTION OF OXYGEN FORMS "GAS POCKETS" WHICH INCREASES OXYGEN PRESSURE AND RAISES OXYGEN SATURATION POINT OF THE BLOOD. (SEE KRAH. MED. IX;82, 1959). (3) INTRAVENOUS INJECTIONS OF GINSENG-GLUCOSE AND AMINOPHYLLINE HAVE THE EFFECT OF REDUCING HYDROPS-PULMONARIS. (4) IN THE CASES ACCOMPANIED BY HYDROPS OF THE LUNGS, WE BELIEVE THAT IT IS STILL BETTER TO ADMINISTER LARGE AMOUNTS OF OXYGEN. IT IS NOT APPROPRIATE TO TRANSFER PATIENTS TO LOWER ALTITUDES. IN THIS ARTICLE CASES NOS. 4 AND 6 DIED EN-ROUTE WHEN BEING TRANSFERRED. THIS IS WORTHY OF OUR ATTENTION.

AS FAR AS THE MECHANISM OF THE SICKNESS, IT IS THE GENERAL BELIEF THAT IN HIGH ALTITUDE AREAS, ALVEOLAR OXYGEN PRESSURE IS LOWERED, WHICH CAUSES LACK OF THIS GAS. RAPID DEOXYGENATION AFFECTS THE NERVOUS SYSTEM FIRST, LEADING TO OVER-STIMULATION, TO CONTROL, AND FINALLY TO UNCONSCIOUSNESS. DUE TO SPEEDING UP OF BREATHING, ALVEOLAR CO<sub>2</sub> EXPANSION IS REDUCED, LEADING TO RESPIRATORY ALKALINOSIS. LACK OF OXYGEN CAN ALSO INCREASE THE PERMEABILITY OF THE CAPILLARY BLOOD VESSELS AND LEAD TO HYDROPS PULMONARIS. (MANUSCRIPT RECEIVED 17 SEPTEMBER 1962, REVIBED 11 DECEMBER 1962.)

THYROID FUNCTION DETERMINATIONS THROUGH THE USE OF THE "FLICKER" COUNTER, 15CM FROM THE SKIN: By CHAO HUI-YANG (6392 1920 2254) AND CH'EN SHIH-CHIEH (7115 6221 2638), ISOTOPE LABORATORY OF THE CHUNGSHAN HOSPITAL, SHANGHAI FIRST MEDICAL COLLEGE, PP. 420-22.

THE THYROID GLAND HAS THE ABILITY OF SELECTIVE ACCUMULATION OF IODINE. THE SPEED AND AMOUNT OF SUCH CONCENTRATION IS RELATED TO THE

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CONDITION AND FUNCTION OF THE GLAND. THIS COUNTRY HAS BEEN USING IRRADIATED IODINE-131 SINCE 1958 IN DETERMINING THYROID FUNCTION.

THE METHOD ADOPTED HAD BEEN GENERALLY THE SOVIET METHOD; PLACING THE R-COUNTER ON THE SKIN CLOSE TO THE CENTER PORTION OF THE GLAND POSITION, IN MAKING THE DETERMINATION. THE DEFECTS OF THIS METHOD LIE IN IT BEING AFFECTED BY THE GEOMETRIC POSITION AND THE SHAPE OR SIZE OF THE THYROID. RESULTS OBTAINED MERELY REPRESENTS THE RELATIVE IODINE-131 ABSORPTION RATE (%), AND DOES NOT REPRESENT THE ACTUAL ABSORPTION RATE.

THEREFORE VARIOUS COUNTRIES IN THE WORLD GENERALLY UTILIZE THE DISTANT "FLICKER" COUNTER METHOD IN ARRIVING AT THE IODINE-131 ABSORPTION RATE. RUSSIA HAS RECENTLY CHANGED TO THIS METHOD.

SINCE 1962, THE ISOTOPE LABORATORY HERE HAS BEEN USING THIS "FLICKER" COUNTER AND PLACING IT 15CM AWAY FROM THE SKIN IN MAKING THE SAME DETERMINATIONS. WE SUMMARIZE HEREINUNDER OUR RESEARCH RESULTS.

(Dr. WAN CHUN-JU 15502 0193 1172 AND COMRADE FA NG JUI-YING  
12455 3843 5391) (CONFIDENTIAL)

TRANSLATIONS FROM CHINESE JOURNAL OF PEDIATRICS  
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STUDIES ON THE ATTENUATED LIVE MEASLES VACCINE

VII. Dosages of Placental Globulin and Vaccine  
in Joint Measles Immunization

[Following is a translation of selected portions of an article by Yu Ting-hsin, Department of Pediatrics, Shanghai Municipal Public Fund Hospital; Yu Ho, Department of Microbiology, Shanghai Medical College No 2; and Chang Ch'ing, Department of Virology, Shanghai Vaccine and Serum Institute; in the Chinese Language periodical Chung-hua Erh-k'o Tsa-chih (Chinese Journal of Pediatrics, Vol 12, No 1, Peiping, February 1963, pages 1-11.)]

Since the publication on the use of additional placental globulin on the same day with measles vaccination (attenuated) (abbreviated to joint measles immunization hereinafter) in section II (22) of this research, the post-vaccination fever has now already been reduced to a problem of no major importance. The dosage of placental globulin then used was uniformly 2ml, regardless of age (restricted to nine months or over) of the susceptible child. To economize on the placental globulin, it is necessary to further determine the effective dosage. In addition, the vaccine dosage in joint measles immunization is also worthy of studying.

## Material and Method

**Subjects and grouping:** Originally 946 so-called measles susceptible children between the ages of nine months and six years were used as subjects for this study. Serological examinations were conducted before and after the immunization on 308 children and none was carried out on the other 638. Among the 308 examined serologically, pre-immunization measles neutralizing antibodies were demonstrated in 16 children, and these should not be classified as susceptible; the other 292 were antibody negative (<1:1 or <1:2) susceptible children and were used as the main subjects in this study. The 638 children with no serological data were used as subjects of reference to this study. The 292 children of pre-immunization negative organisms were divided into two large groups of I and II. Group I consisting of 247 children were all given 316 TCID<sub>50</sub> vaccine dosage subcutaneously. Among these, 26 children were given no additional placental globulin, served as the control for this group and classified as group I<sub>0</sub>; 32 children with the addition of 1 ml (0.12-0.05ml/1,000gm body weight) placental globulin, classified as group I<sub>1</sub>; 81 children with the addition of 1.5 ml (0.17-0.08ml/1,000gm body wt), classified as group I<sub>1.5</sub>; and 108 children with the addition of 2 ml (0.23-0.10ml/1,000gm body wt), classified as group I<sub>2</sub>. In group I, children receiving joint immunization between the ages of 9/12-2 years were classified as group A and those between 2-6 years (or 2-5 years) as group B, for the purpose of comparison between the dosages of placental globulin in these two age groups.

The distribution of the 638 children with no serological data in group I is presented in table (figures enclosed in brackets). Group II consisted of a total of 45 children, all given 31.6 TCID<sub>50</sub> vaccine dosage subcutaneously, 12 of them with no additional placental globulin, serving as control and classified as group II<sub>0</sub>; 11 children with the addition of 1 ml placental globulin, classified as group II<sub>1</sub>; 10 children with the addition of 1.5 ml, classified as group II<sub>1.5</sub>; and 12 children with the addition of 2 ml, classified as group II<sub>2</sub>.

**Vaccine:** Altogether four batches, Nos 6107 (56 bags), 6202 (67 bags), 6203 (68 bags) and 6204 (69 bags), of human amniotic cell preparations were used, all having a toxicity titre of 316 TCID<sub>50</sub>/0.1 ml and fundamentally the same immunogenicity and pathogenicity. Vaccines used in groups I and II were similar, only in the latter, it was specially diluted

tenfold with 199 solution at the time of inoculation. Dosage per injection in each was 0.1 ml.

Placental globulin: All the placental globulin used was produced by the Shanghai Vaccine and Serum Institute and altogether four batches, 60143-1, 60179-1, 61020-2 and 61020-4, were used, each containing measles neutralizing antibody at 1:48 (titre estimated with 0.1 ml). It was taken in the same manner as before.

Clinical and serological observations: Contents of observations and time limit were the same as before. Serological examinations were still done by the ~~neutralization~~ test. The first blood specimens were taken 1-2 days prior to or on the same day of vaccination, and the second specimens taken 4 weeks after the vaccination.

### Results

The content of comparisons in this section was temporarily confined to the total incidences of fever, incidence of high fever (rectal temperature  $39^{\circ}\text{C}$  or higher) and the frequency of positive end-result in serum neutralizing anti-body against measles. The other portions of the content were concisely presented in either table 1 or table 2.

#### I. Group I ( $316\text{TCID}_{50}$ )

Those with placental globulin dosages not estimated according to age.

(1) Comparison of groups  $I_0$  and  $I_1$  (Table 1): The total incidences of post-vaccination fever in those with no additional placental globulin and those with the addition of 1 ml were respectively 80.9 and 37.5 percent and the difference was very apparent ( $\chi^2 > 1\%$  point); incidences of high fever were 46.1 and 9.4% and the difference was also very apparent ( $\chi^2 > 1\%$  point); and the frequency of positive antibody end-result were 96.2 and 96.9 percent and the difference was not apparent ( $\chi^2 < 5\%$  point).

(2) Comparison of groups  $I_0$  and  $I_{1.5}$  (Table 1): When the placental globulin was increased to 1.5 ml, the total incidence of post-vaccination fever and the incidence of high fever were respectively 33.3% and 11.1%, both very significantly different

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( $\chi^2 > 1\%$  point) when compared with the relative incidences in group  $I_0$ ; the difference between frequencies of positive antibody end-result was not apparent ( $\chi^2 < 5\%$  point)

(3) Comparison of groups  $I_0$  and  $I_2$  (Table 1): When the placental globulin was further increased to 2 ml, the post-vaccination total incidence of fever and that of high fever were respectively 26.8% and 4.8%, both of which were also very significantly different ( $\chi^2 > 1\%$  point) when compared with the relative incidences in those with no additional placental globulin; the difference between frequencies of positive antibody end result was not apparent ( $\chi^2 < 5\%$  point).

(4) Comparison of groups  $I_1$  and  $I_{1.5}$  (Table 1): Although the total incidences of fever, high fever and frequencies of positive antibody end-result in the group with the addition of 1 ml of placental globulin and those in the group with 1.5 ml were not all the same, the relative differences were not all significant ( $\chi^2 < 5\%$  points).

(5) Comparison of groups  $I_1$  and  $I_2$  (Table 1): Although there were slight differences between the relative incidences of total fever, high fever and positive antibody end-results in groups with the addition of 1 ml placental globulin and the addition of 2 ml, the relative differences, however, were not all significant ( $\chi^2 < 5\%$  points).

(6) Comparison of groups  $I_{1.5}$  and  $I_2$  (Table 1): There were no significant differences between relative incidences of total fever, high fever and positive antibody end-results in groups with the addition of 1.5 ml placental globulin and the addition of 2 ml ( $\chi^2 < 5\%$  points).

These results showed that in joint immunization against measles, when the vaccine dosage was at  $316 \text{TCID}_{50}$  without the consideration of age of the inoculated, the addition of 1, 1.5 or 2 ml of placental globulin would all significantly reduce the post-vaccination incidences of total fever and high fever, and not affect the frequency of positive antibody end-result. Although there were no apparent differences among the incidences of fever and high fever in the three dosage groups, 2 ml was still apparently the most suitable while the 1.5 ml was not altogether unusable.

2. Those with placental globulin dosages estimated according to age:

(1) Comparison of groups <sup>I</sup><sub>1A</sub> (9/12-2 years of age) and <sup>I</sup><sub>1B</sub> (4-6 years of age) (Table 2): When the same dosage of 1 ml placental globulin was added, the total incidences of post-vaccination fever among the under 2-year old and the over 2-year old were respectively 18.8% and 56.2% with a very significant difference ( $X^2 > 1\%$  point); incidences of high fever were respectively 0% and 18.8%, and the difference was not significant ( $X^2 < 5\%$  points); and the positive antibody end-results were 93.7% and 100%, with difference not being significant ( $X^2 < 5\%$  points).

(2) Comparison of groups <sup>I</sup><sub>1A</sub> and <sup>I</sup><sub>1.5A</sub> (Table 2): When the additional placental globulin given to children under 2 years of age was increased to 1.5 ml, the total incidences of post-vaccination fever (34.6%) and high fever (11.5%) both revealed no significant differences when compared to the relative incidences in the 1 ml addition ( $X^2 < 5\%$  points); frequencies of positive antibody end-results (96.2%) also showed no significant difference ( $X^2 < 5\%$  points). The reasons for the trend to high total incidences of fever and high fever in the 1.5 ml group were not clear.

(3) Comparison of groups <sup>I</sup><sub>1A</sub> and <sup>I</sup><sub>2A</sub> (Table 2): When the additional placental globulin given to children under two years of age was further increased to 2 ml, the total post-vaccination incidences of fever (23.8%) and high fever (2.4%) revealed no significant differences when compared to those in the 1 ml additions ( $X^2 < 5\%$  points); positive antibody end-results also revealed no significant difference ( $X^2 < 5\%$  points).

(4) Comparison of groups <sup>I</sup><sub>1.5A</sub> and <sup>I</sup><sub>2A</sub> (Table 2): When additions of 1.5 and 2 ml of placental globulin were separately given to children under two years of age, the relative total incidences of post-vaccination fever and high fever, though not all identical, revealed no significant differences ( $X^2 < 5\%$  points); positive antibody end-results were also not significantly different ( $X^2 < 5\%$  points).

Results of above comparisons showed that in children under two years of age, if the dosage of attenuated live measles vaccine injected was at  $316 \text{TCID}_{50}$ , the total incidences of fever and high fever after the addition of 1 ml of placental globulin were not significantly different from those with the addition of 1.5 or 2 ml, but, unusually significant differences were present in the total incidences of fever when compared to children over two years of age with the addition

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of 1 ml. Therefore, 1 ml placental globulin may be considered as the general dosage for children under two years of age.

(5) Comparison of groups <sup>I</sup>1B and <sup>I</sup>1.5B (Table 2): When additions of 1 and 1.5 ml of placental globulin were separately given to children over two years of age, the total incidences of post-vaccination fever were 56.2% and 32.7% respectively, and although there was a difference, it was not significant ( $\chi^2 < 5\%$  points). Incidences of high fever were 18.8% and 10.9% respectively and the difference was not significant ( $\chi^2 < 5\%$  points). Positive antibody end-results were 100% and 92.7% respectively and the difference was not significant ( $\chi^2 < 5\%$  points).

(6) Comparison of groups <sup>I</sup>1.5A and <sup>I</sup>1.5B (Table 2): When the same dosage of 1.5 ml placental globulin was given to both children under two years and over two years of age, the total incidences of post-vaccination fever (34.6% and 32.7% respectively), incidences of high fever (11.5% and 10.9% respectively), and positive antibody end-results (96.2% and 96.7% respectively), all revealed no significant differences ( $\chi^2 < 5\%$  points).

(7) Comparison of groups <sup>I</sup>1.5B and <sup>I</sup>2B (Table 2): When the additional placental globulin given to children over two years of age was increased to 2 ml, the total incidences of post-vaccination fever (28.8%), high fever (6.3%) and positive antibody end-result (96.9%) showed no significant differences when compared with the relative incidences in those with the addition of 1.5 ml ( $\chi^2 < 5\%$  points).

(8) Comparison of groups <sup>I</sup>2A and <sup>I</sup>2B (Table 2): When the increments of placental globulin in both children under two years and over two years of age were increased to 2 ml, their total incidences of post-vaccination fever were 23.8% and 28.8% respectively and the difference was not significant ( $\chi^2 < 5\%$  points); incidences of high fever were 2.4% and 6.3% respectively, the difference was also not significant ( $\chi^2 < 5\%$  points); and the positive antibody end-results were 100% and 96.9% respectively with no significant in the difference ( $\chi^2 < 5\%$  points).

(9) Comparison of groups <sup>I</sup>2B and <sup>I</sup>1B (Table 2): When the additions of 2 and 1 ml of placental globulin were separately given to children over two years of age, the total post-vaccination fever were 28.8% and 56.2% respectively, and the difference was significant ( $\chi^2 > 5\%$  points,  $< 1\%$  point); incidences of high fever were 6.3% and 18.8% respectively and the differ-

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ence was not significant ( $\chi^2 < 5\%$  points); and the positive end-results were 96.9% and 100% respectively and the difference was not significant ( $\chi^2 < 5\%$  points).

Results of above comparisons showed that in children over two years of age, if the dosage of attenuated live measles vaccine injected was at 31.6TCID<sub>50</sub>, the total incidence of fever in those with the addition of 1.5 ml of placental globulin was less than that with the addition of 1 ml, but the difference was not significant, whereas compared with the addition of 2 ml revealed a significant difference; although incidences of high fever showed a progressive decrease with the increase in amount of placental globulin, the differences among them were not significant. Hence, 2 ml of placental globulin was the most suitable dosage for children over two years of age followed by the 1.5 ml.

(II) Group II (31.6TCID<sub>50</sub>)

Due to the limited number of children in this group, it was not divided into the two age groups A and B as in group I, and the following comparisons were only limited to the dosage of placental globulin which was estimated regardless of age.

1. Comparison of groups II<sub>0</sub> and II<sub>1</sub> (Table 1): Under the circumstance when vaccination dosages were both at 31.6TCID<sub>50</sub>, the total incidences of post-vaccination fever in those with no additional placental globulin and those with the addition of 1 ml were 58.3% and 54.4% respectively, and the difference was not significant ( $\chi^2 < 5\%$  points); incidences of high fever were 33.3% and 27.3%, difference was also not significant ( $\chi^2 < 5\%$  points); and the positive antibody end-results were 83.3% and 81.8% respectively, and the difference was not significant.

2. Comparison of groups II<sub>0</sub> and II<sub>1.5</sub> (Table 1): When the dosage of placental globulin was increased to 1.5 ml, the total incidence of post-vaccination fever (10%) and incidence of high fever (0%) were significantly reduced ( $\chi^2 > 5\%$  points,  $\chi^2 < 1\%$  point) when compared with those with no additional placental globulin; the positive antibody end-result (70%) however, showed a difference, but it was not significant ( $\chi^2 < 5\%$  points).

3. Comparison of groups  $^{II}_0$  and  $^{II}_2$  (Table 1): When the dosage of placental globulin was further increased to 2 ml, the total incidence of post-vaccination fever (16.6%) showed a significant difference ( $X^2 > 5\%$  points,  $X^2 < 1\%$  point) when compared with those with no addition; incidences of high fever (8.3%) although showing a difference, were not significant ( $X^2 < 5\%$  points).

4. Comparison of groups  $^{II}_1$  and  $^{II}_1.5$  (Table 1): When the dosages of additional placental globulin were respectively at 1 and 1.5 ml, the total incidences of post-vaccination fever were 54.5% and 10% and the difference was significant ( $X^2 > 5\%$  points,  $< 1\%$  point); incidences of high fever were 27.3% and 0% and the difference was also significant ( $X^2 > 5\%$  points); and the positive antibody end-results showed a difference which was not significant ( $X^2 < 5\%$  points).

5. Comparison of groups  $^{II}_1$  and  $^{II}_2$  (Table 1): When the dosages of additional placental globulin were respectively at 1 and 2 ml, the total incidences of post-vaccination fever were 54.5% and 16.6% and the difference was significant ( $X^2 > 5\%$  points,  $< 1\%$  point); incidences of high fever were 27.3% and 8.3%, differences existed but were not significant ( $X^2 < 5\%$  points); and the positive antibody end-results were 81.3% and 91.7% and the differences were not significant ( $X^2 < 5\%$  points).

6. Comparison of groups  $^{II}1.5$  and  $^{II}_2$  (Table 1): When the dosages of additional placental globulin were respectively at 1.5 and 2 ml, the relative total incidences of post-vaccination fever, high fever and positive antibody end-results although they showed differences, none of them was significant ( $X^2 < 5\%$  points).

Results of the above comparisons showed that in joint measles immunization, when the dosage of vaccine used was at 31.6TCID<sub>50</sub> without considering the age of the vaccinated, the total incidences of post-vaccination fever and high fever in those with the addition of 1 ml of placental globulin were not significantly different from those with no addition; and when the addition was 1.5 or 2 ml, the total incidence of post-vaccination fever was significantly reduced and the incidence of high fever also showed a definite difference; but the relative differences between 1.5 and 2 ml additions were not significant; and the positive antibody end-results did not decrease with the progressive increase of the dosage of placental globulin. Therefore, under the circumstance when the vaccine

dosage of  $31.6 \text{ TCID}_{50}$  is employed, 1.5 ml of placental globulin may be considered as the dosage for general use.

## II. Additions of equal dosages of placental globulin to unequal dosages of vaccine

(I) Comparison of groups  $I_0$  and  $II_0$  (Table 1): When the dosages of vaccines employed were respectively at 316 and  $31.6 \text{ TCID}_{50}$ , although there was a difference between the respective post-vaccination total incidences of fever (80.9% and 58.3% respectively), it was not significant ( $\chi^2 < 5\%$  points); the difference between incidences of high fever (46.1% and 33.3%) was also not significant ( $\chi^2 < 5\%$  points); and the difference between the positive antibody end-results (96.2% and 83.3%) was not significant ( $\chi^2 < 5\%$  points).

(II) Comparison of groups  $I_1$  and  $II_1$  (Table 1): When the dosages of vaccine employed were still respectively at 316 and  $31.6 \text{ TCID}_{50}$  and each had the addition of 1 ml of placental globulin, difference existed between the respective total incidences of post-vaccination fever (37.5% and 54.5%), incidences of high fever (9.4% and 27.3%) and the positive antibody end-results (96.9% and 81.8%), but they were all not significant ( $\chi^2 < 5\%$  points).

(III) Comparison of groups  $I_{1.5}$  and  $II_{1.5}$  (Table 1): When the dosages of vaccine employed were still respectively at 316 and  $31.6 \text{ TCID}_{50}$  and each with the addition of 1.5 ml of placental globulin, the respective total incidences of post-vaccination fever (33.3% and 10%) and the incidences of high fever (11.1%) were not all the same, and the differences were not significant ( $\chi^2 < 5\%$  points); the positive antibody end-results were respectively 93.8% and 70% and the difference was significant ( $\chi^2 > 5\%$  points,  $< 1\%$  point). The reason for the difference present in the latter was difficult to explain since no significant difference was shown below with the addition of 2 ml placental globulin.

(IV) Comparison of groups  $I_2$  and  $II_2$  (Table 1): When the dosages of vaccine employed were still not similar and each had the addition of 2 ml of placental globulin, the relative differences in post-vaccination total incidences of fever (26.8% and 16.6% respectively), incidences of high fever (4.8% and 8.3% respectively) and the positive antibody end-results (98.1% and 91.7% respectively) were all not significant ( $\chi^2 < 5\%$  points).

Based on the results of these comparisons, it can be seen that: when attenuated live measles vaccine was employed alone, the total incidences of post-vaccination fever and high fever were not significantly reduced by the reduction of vaccine dosage to 1/10; and in the joint immunization method, reduction in the dosage of additional placental globulin in each case was not necessary when the dosage of vaccine was reduced (meaning reduced from 316 to 31.6TCID<sub>50</sub>).

### Discussion

Mc Crumb et al(35) and Stokes, Jr. et al(36) all estimated the required dosage of gamma globulin in the joint measles immunization according to the body weight. It had the advantage of being relatively precise. However, seen from the analysed data of this study, the dosage of placental globulin (when the titre of measles neutralizing antibody contained was at 1:48) required by each child was not much and the difference in the amount was also little, generally about 0.5-1.0 ml. When the joint measles immunization is employed in large scales for measles prevention in the future, the accurate mastering of the body weight of each susceptible child will not be an easy task, and also it is not actually necessary. Hence the employment of the relatively simple form of placental globulin dosage seemed to be even more reasonable.

Under the conditions that the vaccine and placental globulin were used in this study, the following two cases pertinent to dosages of placental globulin are worthy of note:

- (1) If the age of the subject vaccinated was not considered, using the 2 ml dose would be more reliable. The 1.5 ml dose, although is not as good, seems also to be acceptable.
- (2) If the dosage was given according to age, 1 ml as the general dosage in children under two years of age is quite sufficient. In children over two years of age, the 2 ml dose should be employed. For general use, an 1.5 ml dose may also be considered. Viewed from the post-vaccination clinical reactions in children with no serological examinations (figures enclosed in brackets) itemized in table 2, they were very close to those with serological data, indicating that the above two cases are worthy of consideration.

The dosage of vaccine in the joint measles immunization is at present a problem still to be decided. Viewed from the results on comparisons of the two dosages of 316 and 31.6TCID<sub>50</sub> in this study, although the differences between them were not significant, the former was still regarded as relatively more dependable.

### Conclusion and Excerpts

This article is aimed at investigating the dosages of placental globulin and vaccine in joint measles immunization, and the major results are as follows:

1. Under the present conditions of the vaccine (316TCID<sub>50</sub>) and placental globulin employed, and after the addition of 1, 1.5 or 2 ml of placental globulin regardless of age, the total incidence of fever (37.5%, 33.3% or 26.8% respectively) and incidence of high fever (9.4%, 11.1% or 4.8% respectively) were significantly reduced when compared with those with no additions (80.9% and 46.1%); and the positive antibody end-results were not affected. The relative differences among the three types of dosages although not significant, the 2 ml dose was nevertheless regarded as the most suitable, but the 1.5 dose was also not altogether unusable.

2. When conditions under which vaccine and placental globulin were employed were similar to those stated above and after the addition of 1 ml placental globulin in children under two years of age, the total incidence of fever (18.8%) and incidence of high fever (0%) showed not much difference when compared with the 1.5 ml addition (34.6% and 11.5% respectively) or the 2 ml addition (23.8% and 2.4% respectively); whereas in children over two years of age, the total incidence of fever after the addition of 2 ml was significantly reduced (26.8%) when compared with the 1 ml addition (56.2%), and the difference was not significant when compared with the 1.5 ml addition (32.7%). Therefore we suggest 1 ml as the general dosage for children under two years of age and 2 ml for those over two years of age, and in the case of the latter, the use of 1.5 ml may also be considered.

3. This study on the joint measles immunization did not reveal the necessity of reducing the dosage of placental globulin when the dosage of vaccine was reduced from 316TCID<sub>50</sub> to 31.6TCID<sub>50</sub>.

4. The suitable dosage of vaccine required in joint measles immunization has yet to be determined.

## VIII. Further Investigation on the Automatic Immunization in Infants

By Yu Ting-hsin, Yu Ho and Chang Ch'ing

In section III of this study, the authors reported that in infants under six months old, success in immunization becomes more difficult with decrease of age. However, the dosage of vaccine then used was limited only at  $316\text{TCID}_{50}$  and the results could only be claimed for this one dosage. This study is aimed at investigating further if a still bigger dosage would increase the chance of success in immunization in infants 2-5 months old.

### Material and Method

### Results of Observation

### Discussion

### Conclusion

This article reports on the serological results on the vaccination in 76 infants 2-5 months old using three types of dosages at  $316$ ,  $1,000$  and  $1,500\text{TCID}_{50}$ :

1. In 16 infants of 2-3 months, 8 were vaccinated using either  $316$  or  $1,000\text{TCID}_{50}$  with no positive antibody end-result; the other 8 were vaccinated using  $1,500\text{TCID}_{50}$  and showed 3 with positive antibody end-results. These few cases of positive antibody end-results suggested the possibility of successful immunization in infants at this stage.

2. In 60 infants of 4-5 months old, whether the dosage of vaccine employed was at  $316$ ,  $1,000$  or  $1,500\text{TCID}_{50}$ , the frequencies of post-vaccination positive antibody end-results were on the whole alike, only reached to about  $2/3$  of the number of infants vaccinated.

3. The authors suggest the classification of infants 4-5 months old as subjects in prophylaxis during years close to measles epidemics.

#### IX. Observations on the Epidemiological Results in the Inhabitants

By Ku Tsung-lien, Shanghai P'u't'o District Epidemiological Station; Shao Chun, Shanghai Epidemiological Station; Wang Kuang-ya, Shanghai P'u't'o District Epidemiological Station; and Huang Chung-t'ao, P'u't'o District Sha-hung-pin Thorough-fares Hospital.

The joint employment of attenuated live measles vaccine and placental globulin had already been proved by this research team Yu Ting-hsin et al(22,38) that it can lessen the severity and incidence of post-vaccination reactions without any effect on the immunization result. However, the object of their observation was mainly the measles susceptible children in group organizations, and the experience on the vaccination of inhabitants of the fixed mass is still lacking. This study is aimed at observing the post-vaccination reactions in the inhabitant measles susceptible children and the effects of 30-45% vaccination rate on the incidence of measles.

##### Material and Method

##### Results of Observation

##### Discussion

##### Conclusion and Excerpt

This article reports on the results of the trial employment of attenuated live measles vaccine and placental globulin joint immunization in the inhabitants. The clinical post-

C-O-N-F-I-D-E-N-T-I-A-L

vaccination reactions were in unanimity with the findings of Yu et al(22). After four months of observation on the epidemiological results, except in one case, none had developed measles. When the vaccination rate reached 30-45% among the mass of susceptible children, it may effectively control the extending measles outbreaks.

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(CONFIDENTIAL)

C-O-N-F-I-D-E-N-T-I-A-L

REPORT ON A CASE OF ENCEPHALITIS B SEEN DURING  
WINTER SEASON IN SHANGHAI

[Following is a translation of selected portions of an article by Wang I-ch'en and Chang Tsung-chien, Shanghai Communicable Diseases Hospital, and Feng Wen, Shanghai Epidemiological Station in the Chinese-Language periodical Chung-hua Erh-k'o Tsa-chih (Chinese Journal of Pediatrics), Vol 12, No 1, Peiping, February 1963, page 11.]

Epidemic encephalitis B is very strictly a seasonal disease which is very rarely seen during the winter season and only five cases have been reported in literature (1,2) here and elsewhere. In January 1962, one case had been discovered in the Shanghai Communicable Diseases Hospital with typical clinical course and pathological findings, and also recovery of virus from brain tissues.

Isolation and Identification of Virus according to routine, brain tissue suspension from the sick child was inoculated intracranially into mice weighing only 6-8gm and observed for 21 days. Two of the mice developed the disease and died on the 5th day. After the second generation, all of the mice died. After the third generation, the latent period became fixed at 4-5 days and the cultivations were passed through 8 generations. Complement-fixation and neutralizing tests done on Tai-shu brain antigen (acetone ether extraction) and guinea pig immune serum made from this strain of virus both showed it to be identical to the encephalitis B Ching-wei-yen strain 1 virus. This case has shown that encephalitis B also occurred during the winter season in Shanghai area and is worthy of attention.

OBSERVATIONS ON THE JOINT USE OF ATTENUATED LIVE  
MEASLES VACCINE AND PLACENTAL GLOBULIN  
IN MEASLES PREVENTION

[Following is a translation of selected portions of an article by Hsu Chao-yu, Peiping Municipal Children's Hospital; Sung Hsu-ying, Pediatrics Institute, Chinese Academy of Medical Sciences; Ch'i Chin-ling, Department of Pediatrics, Railroad Medical College; Lin Ch'u-an-chia, Peiping Municipal Children's Hospital; and Chu Fu-t'ang, Peiping Municipal Children's Hospital and Pediatrics Institute, Chinese Academy of Medical Sciences; in the Chinese-language periodical Chung-hua Erh-k'o Tsa-chih (Chinese Journal of Pediatrics), Vol 12, No 1, Peiping, February 1963, pages 12-15.]

During recent years, the result of automatic immunization in children here in China and elsewhere with attenuated live measles vaccine has gradually become definite (1,2,3,4). However, the post-vaccination fever reaction is still at present the major hindrance in massive expansion in the use of the vaccine. From the results of Huang Chen-hsiang et al(1) on the injections of varied doses of placental globulin on varied days after the vaccination, it can be seen that: Variations of the day of globulin injections showed not much difference in the effect on relieving the fever, whereas the dosage of globulin has an apparent effect on the reactions.

Soon after, Yu Ting-hsin et al(2) reported that immediate injections of globulin at the time of vaccination may also re-

duce the fever reaction. This study is aimed at observing the reactivity and immunity after the joint use of vaccine, prepared by strains of virus passed through relatively many generations, and globulin, together with trying to seek the suitable dosage of globulin required under the conditions of vaccine presently employed.

### Material and Method

**Vaccine and Globulin:** All of the vaccines used were attenuated live measles vaccine prepared by the Shanghai Serum and Vaccine Institute from Lieh-ning-ko-lo strain 4 (<sup>L4</sup>) that had been passed through 26 generations in human embryonic kidney cells and again 68 generations in primary human amniotic cells, batch No. 6203 and the virus content of each 0.01 ml was at 316TCID<sub>50</sub>. When smaller doses were used, dilutions were carried out at the time of injections with Hank's solution. The placental globulin was from the National Serum and Vaccine Institute with the same batch number (60126), and the measles antibody was estimated to be at 1:70 (0.1 ml used for the estimation) by tissue culture neutralizing method.

**Experimental Method:** From the Pediatrics Institute, Railroad Hospital, Peiping Municipal Children's Hospital and the public health sections of children's hospitals in West city and Ch'ung-wen Districts, 376 healthy children aged from 6 months to 7 years with no history of measles from the nurseries were selected as subjects for this study. The great majority of the children was entirely taken care by the nurseries and had received no recent injections of adult blood or globulin. The entire group of children was divided into three groups and each of them was vaccinated subcutaneously in the left upper arm, dosages used for the three groups were at 632, 105 and 10.5TCID<sub>50</sub> respectively. Except a small portion of children that received only the vaccination to serve as control, each of them was immediately given an injection of 1-2 ml placental globulin into the opposite gluteal muscles. The following observations were carried out on each child:

1. Within the first two weeks or longer duration after the immunization, auxillary temperature was taken 2-3 times daily and at the same time, skin rash, Fei-i-k'o's spots, catarrhal symptoms as well as mental and appetite changes were recorded.

C-O-N-F-I-D-E-N-T-I-A-L

In totaling the fever reactions, due to the fact that slight temperatures of 37.1-37.5°C were not emphasized by the parents in prophylactic work, body temperatures of under 37.5°C were not included, and the frequency of fever reactions was estimated only in children with temperatures of 37.6°C and over. And the incidence of high fever was estimated by the number of children with 38.6°C and over.

2. About one month before and after the immunization, blood samples were taken from a small portion of children for measles antibody examination, using the hemagglutination inhibition test plastic board minute quantity method(5) as the principle estimation method, and a small portion of samples were also estimated simultaneously by the tissue culture neutralization method. Antibody titres obtained by the two methods were fundamentally alike.

3. Observations were done on the immediate results of the epidemiological prophylaxis.

Results of Observations and Discussion

Excerpts

1. In immunizations with attenuated live vaccine prepared by measles virus strain L4 passed through 68 generations in human amniotic cells, if no globulin was used jointly, high fever reactions of over 38.6°C still occurred in many of the children. The use of 1-2 ml placental globulin may control the high fever incidences at about five percent. A dose of 1.0 ml in children under two years of age and 1.5 ml in children of 2-7 years of age may serve to control the high fever.

2. Among the 14 children in the small dosage group 10.5- $\text{TCID}_{50}$ , sera of two cases showed no positive antibody end-results, and one of these cases developed measles when came into contact with the disease. Whereas in the two groups with larger doses, all of the children showed positive end-results. In collaboration with findings in the literature, it was our consideration that the vaccine dosage should not be too small.

3. Six months of immediate epidemiological observations showed that in 70 children with automatic immunization that came into close contact with measles patients, except for one case, none of them developed the disease.

The vaccine was given by the Shanghai Serum and Vaccine Institute; portion of the serological examinations were done by Drs. Kuo K'e-se and Chia Ping-i, Department of Virology, Chinese Academy of Medical Sciences; and portion of observations was assisted by Dr. Li Hsueh-chu and comrades Pai Hui-te and Fang Ching-ju; we hereby express our gratitude.

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(CONFIDENTIAL)

STUDIES ON THE DISTRIBUTIONS OF INTESTINAL  
VIRUSES IN HEALTHY CHILDREN IN PEIPIING IN 1959-1961

[Following is a translation of selected portions of an article by Ku Fang-chou, Wang Min-ch'ao, Tseng I, Wang Chien-nan, Wang Cheng and Chou Hsiu-lan, Department of Virology, Chinese Academy of Medical Sciences; and Mu Kuei-fan, Institute of Medical Biology, Chinese Academy of Medical Sciences; in the Chinese-language periodical Chung-hua Erh-k'o Tsa-chih (Chinese Journal of Pediatrics), Vol 12, No 1, Peiping, February 1963, pages 16-20.]

Research on intestinal viruses has been greatly developed during the past few years. Up to the present, 61 types of intestinal viruses had been discovered: poliomyelitis, 3 types; ECHO, 28 types; Coxsackie (abbreviation to Coxs. below) A, 24 types and B, 6 types. Many of these types of viruses were shown to induce various diseases or syndromes such as non-bacterial meningitis, paralysis, herpetic pharyngitis, conjunctivitis, myocarditis, epidemic myalgia and diarrheas in infants and young children, etc.

China's Sung Kan et al(3) first in 1956 isolated a strain of Coxs. group A virus. In 1959 Ku Fang-chou et al(4) isolated and typed 23 strains of Coxs. group A viruses from stools of poliomyelitis patients. Ho Nan-hsiang (1959), Tseng I and Chang Ching-fang (1961) have found by serological method that the placental globulin produced by the Peiping, Shanghai, Chang-chun, Chengtu and Wuhan Institutes of Serum and Vaccine con-

tained various types of intestinal virus antibodies (5,6). These materials indicated that intestinal viruses are widely distributed in China.

To understand the situations of intestinal virus distribution, we in Peiping have isolated intestinal viruses in July 1959, April and May 1960, and October 1961, from altogether 1793 healthy children aged from six months to 7 years. From the 2769 stool specimens collected, a total of 544 strains of intestinal viruses were recovered. The results are reported below.

#### Material and Method

1. Source of stool specimens. In July 1959, 440 stool specimens were collected from children of various ages in six nurseries in municipal Peiping. In April and May of 1960, 2,112 specimens were collected from 1,146 children of various ages from 10 nurseries in the municipality one week before the oral administration of type I and type II live poliovirus vaccine. In 1961 with the help of the Pediatrics Institute of Chinese Academy of Medical Sciences, 207 specimens were collected from children under two years of age in one of the sections. The collected specimens were either managed immediately or set in a -20°C ice box to be managed later.

2. Management of the stool specimens. Take 1 gm of stool made into 20% suspension with Hanks solution (in 1960, 5% activated carbon was added for detoxication). Set in -20°C low temperature refrigerator over night. On the next day, centrifuge at 3,000 r/m for 30 minutes and pipette the supernatent fluid. Then, add to it penicillin and streptomycin to the strength of 1,000 units per milliliter, and afterwards let stand at room temperature for 30 minutes, divide into two small test tubes, stopper and store at -20°C for the test.

3. Preparation of immune serum. Monkey kidney tissue culture fluids of Mohoney (type I), MEF-1 (type II) and Sankett (type III) strains of virus were used as antigens to immunize sheep of about one year old for the three types of immune sera. The first injection of 10 ml was given intramuscularly, another 10 ml given intravenously one week later, and a third 10 ml again intravenously in another two weeks. Generally the antibody titre already reached over 1:320 when blood was tested one week after the third injection. If the titre was not high

enough, more intravenous injections of 10 ml may be given every 1-2 weeks. The antibody titres of the immune sera we used were type I at 1:1280; type II at 1:320; and type III at 1:2560. All of the immune sera were frozen dry and stored at 4°C, diluted with Hanks solution before use of types I and III to 1:40 and type II to 1:30.

The various types of immune sera of Coxs. A 1-19 and B 1-5 were prepared by guinea pig immunization. A 20% suspension antigen of skin and muscle of suckling mice with the addition of 1 ml of lanolin is injected into guinea pigs subcutaneously for a total of three injections. First injection, 2 ml; second, 3 ml; and the third, 4 ml; at one week intervals and blood was taken one week after the last injection. After being separately packaged, the immune sera were stored at -15°C. Cross neutralization test was done with the standard strain before being used and diluted to 1:10 at the time they were used.

ECHO 1-19 immune sera were prepared by rabbit immunization. Take rabbit weighing 3 kg. Various types of ECHO viruses, freshly subcultivated in monkey kidneys and after sedimentation by centrifuging, were injected into ear veins of rabbits. Immunizations were done three times, each time 5-10 ml and the two intervals of 1 and 2 weeks. Blood was tested one week after the third injection and diluted to 1:10 at time of use.

4. Isolation and Identification of Viruses. Methods for isolation and identification of Coxs. A viruses were the same as those used in 1959(4).

The method used for isolations of polio, ECHO, Coxs. B and A<sub>9</sub> viruses was fundamentally the same as the one used for isolation of poliovirus by Ku Fang-chou et al(7) in 1958.

Identification of poliovirus was done by the routine method. In the identifications of Coxs. B viruses, the specimen was first mixed with an equal amount of mixed sera of Coxs. B 1-5, and a neutralization test was carried out using monkey kidney epithelial cells. If this specimen was neutralized, separate neutralization tests were then carried out and if not, neutralization tests would then be carried out with ECHO 1-19 and Coxs. A<sub>9</sub>.

Identifications of ECHO viruses. (1) Following method was used in 1959: ECHO 1-19 immune sera were divided into 4 groups; a) 1,3,5,8 and 10; b) 2,4,6,7,9; c) 11,12,13,14,15; and d) 16,17,18,19,A<sub>9</sub>; with equal amount sera in the mixture of each group. Above sera were diluted with Hanks' solution rendering the final dilution at 1:10, then separately mixed with equal amounts of unknown viruses ( $10^{-2}$  or  $10^{-3}$ ) and incubated at 37°C for 1 hour. If neutralization took place, separate neutralization test was then made with each single type of immune serum of that group. (2) In 1960, Lim et al's method(8) was used for the identifications and due to the lack of type 17 at that time, grouping was rearranged according to Lim's principle. Resulting judgments are seen in Table 1.

### Discussion

### Conclusion

1. From 1959 to 1961, 553 strains of intestinal viruses were isolated from stools of 2,759 healthy children in Peiping. The isolation rate of 49.3% in July 1959 was the highest, followed by the 32.8% in October 1961. Isolation rate in April 1960 was 7.6% and that in May, 17.9%.

2. Among the intestinal viruses, Coxs. A group was the most numerous, totaling 249 strains. Next was polio-viruses, totaling 116 strains; Coxs. B group was relatively less (60 strains) and ECHO viruses were the least (49 strains).

3. There were many types among the isolated intestinal viruses. In Coxs. A group there were 15 types (A 1-14, 16); Coxs. B group consisted of types 1,2,4 and 5; ECHO consisted of 14 types (1,2,3,4,5,6,7,8,11,12,14,15,16, and 19).

4. The isolation rate of intestinal viruses was related to age; it was comparatively higher in children under 3 years of age. (CONFIDENTIAL)

ESTIMATIONS OF THE NEUTRALIZING ANTIBODIES  
AGAINST INTESTINAL VIRUSES (ECHO AND COXSACKIE)  
IN INDIGENOUS PLACENTAL GLOBULIN

[Following is a translation of selected portions of an article by Tseng I, Chang Ching-fang and Yu Fang-chou, Department of Virology, Chinese Academy of Medical Sciences; in the Chinese-language periodical Chung-hua Erh-k'o Tsa-chih (Chinese Journal of Pediatrics), Vol 12, No 1, Peiping, February 1963, pages 21-23.]

Human intestinal viruses include also, in addition to polio-viruses, Coxsackie (abbreviated to Coxs. below) and ECHO viruses, and 61 types of them have already been discovered. In China since 1956, Coxs. viruses were successively isolated in Tientsin, Shanghai, Chekiang, Peiping and Fukien areas (1,2,3, 4,6). The report in this article on the estimations of the neutralizing antibodies against intestinal viruses in placental globulin produced by the cities of Peiping, Shanghai, Cheng-tu, Changchun and Wuhan is aimed at further understanding of the distribution of intestinal viruses among all people in China's several major cities.

Material and Method

I. Material

1. Placental globulin. Altogether nine batches, all produced in 1959 by the Institutes of Serum and Vaccine of Peiping

and the other four cities. The batch numbers were: 5947, 5925 (Peiping), 59085, 59140 (Shanghai), 5984, 5959 (Changchun), 4-2, 5-1 (Chengtu), and 14-3 (Wuhan). Stored at -20°C.

2. Viruses ECHO types 1-19, Coxs. A 1-19 and B 1-5 were all given by the Soviet Poliomyelitis Institute. After separately subcultivated in monkey kidney epithelial cells and 24-48 hour old suckling mice, the viruses were stored in refrigerator at -20°C.

3. Tissue culture. Using single layer of monkey kidney epithelial cells and the maintaining fluid consisted of 0.2% lactoprotein hydrolyte Hanks solution; 2% horse serum containing no human intestinal virus antibodies, penicillin 100 units/ml and streptomycin 100 microgram/ml, pH regulated to 7.6-7.8 with 5.6% NaHCO<sub>3</sub>.

4. Suckling mice. Normal and healthy white suckling mice 24-48 hours after birth were supplied by the animal house of this hospital.

## II. Method

1. Estimations of the neutralizing antibodies against ECHO, Coxs. B and A<sub>9</sub> in placental globulin. Placental globulin diluted with Hanks solution to 1:10 and mixed with equal amount of 100TCID<sub>50</sub> virus (0.25 ml each) was set in a 37°C waterbath for 1½ hours. This mixture was then inoculated into tubes of monkey kidney cells, 0.2 ml to each tube and to which 0.8 ml of maintaining fluid was added, cultivated at a constant temperature of 37°C. Results were observed on the 1, 3, 5 and 7th day.

2. Estimations of the Coxs. A group neutralizing antibody content of Peiping placental globulin. Standard virus diluted to 10<sup>-1</sup> and mixed with equal amount (0.15 ml each) of placental globulin in its original dilution was set in a 37°C water-bath for one hour. This mixture was then inoculated into suckling mice of 24-48 hours old, one lot to each litter (8 heads), and 0.03 ml into each suckling mouse intraperitoneally. Observations were made daily after the inoculations for 10-14 days and results recorded.

3. Estimations of the ECHO and Coxs. neutralizing antibody content of Peiping placental globulin. The placental globulin was diluted proportionally to from 1:10-1:640. The diluted placental globulins were then each separately mixed with equal amount of various types of 100TCID<sub>50</sub> viruses, set in 37°C water-bath for 1½ hours, and separately inoculated into tubes of monkey kidney epithelial cells and suckling mice. Results were observed and recorded.

### Results and Discussion

### Conclusion

The placental globulins produced in Peiping, Shanghai, Changchun, Chengtu and Wuhan all contained neutralizing antibodies of ECHO 1-19, Coxs. B<sub>1-5</sub>, and A<sub>9</sub> types of viruses. In addition, the Peiping placental globulin also contained neutralizing antibodies of Coxs. A<sub>1-18</sub> types of viruses. The antibody titres were mostly in between 1:40-1:160, and in some types such as ECHO 4 and Coxs. B<sub>2</sub> were as high as 1:320-1:640. Titres of ECHO 7,8,12 and 17; and Coxs. A<sub>9</sub> antibodies were relatively low, 1:10. These results indicated that ECHO and Coxs. viruses were widely distributed in the areas mentioned above and of many types. They also showed that peoples in those areas had been extensively infected by these viruses.

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(CONFIDENTIAL)

ARTERIAL BLOOD TRANSFUSION AND UREA AS THE LIFE-SAVING MEASURES IN CIRCULATORY AND RESPIRATORY FAILURES DURING THE TERMINAL STAGE OF TOXIC BACILLARY DYSENTERY

[Following is a translation of selected portions of an article by Wang Ts'ai-liang, Department of Pediatrics, Nanyang Hospital, Shanghai Hu Wan District; in the Chinese-language periodical Chung-hua Erh-k'e Tsa-chih (Chinese Journal of Pediatrics), Vol 12, No. 1, Peiping, February 1963, pages 31-35.]

In spite of all the complex clinical manifestations present in toxic bacillary dysentery, many of China's scientists after careful observations during the past few years have summarized the three crisis in need of life-saving measures in the disease --circulatory failure, respiratory failure and convulsions, the most fundamental causes of death among which are circulatory and respiratory failures. Aiming at these two major dangers, much treasured life-saving experiences have been created by pediatrics workers in various places, such measures as the employment of large doses of demethyl epinephrin(1,2), large doses of lobeline(1), large doses of atropin(3) and artificial hibernation(4), etc. Since that we learned much from the foremost experiences stated above, and many seriously ill children have actually been saved.

On the other hand, we have also encountered some unusually serious circulatory and respiratory failure cases that showed no improvement after the employment of the general life-saving measures and entered into the terminal stage. We have preliminarily tried the use of arterial blood transfusion and urea separately as the final life-saving measures in late-stage

circulatory and respiratory failures, and obtained definite results. Results of observations are now concluded in two parts below.

The Use of Arterial Blood Transfusion and Arterial Infusion under Pressure for Life-Saving in Serious Circulatory Failures

The Use of Urea Solution in Intravenous Drip for Life Saving in Serious Respiratory Failures

Conclusion

This article presented the trial use of arterial blood transfusion, arterial pressure infusion and intravenous drip of urea separately as life-saving measures in the perils of the circulatory and respiratory failures--the two major causes of death during the terminal stage of toxic bacillary dysentery. The uses of arterial blood transfusions and pressure infusions were for the purpose of rapid filling and sustaining an effective blood volume in the arterial system, and at the same time, the cardiovascular and respiratory centers may be excited reflectively by stimulating the arterial interoceptors. Urea was used in cases with symptoms of "convulsion state" and signs of early respiratory failure. We have tried these two methods separately in six cases each as life-saving measure during the terminal stages of circulatory and respiratory failures, and resulted in 5 survivals and 1 death each. Indications and points worthy of note in the use of the above two methods as life-saving measures in toxic bacillary dysentery have also been preliminarily presented.

While this work was undertaken, help and encouragement in many aspects had been given by Chairman Wu Tieh-mei and to whom I am grateful.

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(CONFIDENTIAL)

THE EFFECT OF BACITRACIN IN THE TREATMENT OF MEASLES  
ACCOMPANIED BY STAPHYLOCOCCUS AUREUS PNEUMONIA

[Following is a translation of selected portions of an article by Chang Chao-t'ung, Li Pao-liang, Huang Teh-chuang and Fan Ta-chih, Peiping Municipal Communicable Disease Hospital No 2; in the Chinese Language periodical Chung-hua Erh-k'o Tsa-chih (Chinese Journal of Pediatrics), Vol, 12, No 1, Peiping, February 1963, pages 37-41.]

From January through June 1962, a total of 1,132 child cases of measles pneumonia were admitted for treatment in this hospital, and among them, 382 cases were caused by staphylococcus aureus.

Conclusion

1. A total of 224 cases were treated by bacitracin and according to observations, the effect of this drug was fairly good when used jointly with other antibiotics. Side actions were not much, some reversible irritating effects may occur in the kidneys under general dosages, and furthermore, this drug is inexpensive. It may be first used as an bactericidal antibiotic in the treatment of staphylococcal infections.

2. Principles in the treatment of staphylococcal pneumonia and the side actions of bacitracin were discussed.

## STAPHYLOCOCCAL ENTERITIS IN CHILDREN

[Following is a translation of selected portions of an article by Liu Wen-chien and Sung Shun, Department of Infectious Diseases, Peiping Municipal Children's Hospital; in the Chinese-language periodical Chung-hua Erh-k'o Tsa-chih (Chinese Journal of Pediatrics), Vol 12, No 1, Peiping, February 1963, pages 42-46.]

During recent years due to the extensive use of broad spectrum antibiotics, the relatively uncommon staphylococcal, *B. pyocyaneus*, *B. coli*, *B. proteus* and monilial infections become more frequently seen and the serious *staphylococcus aureus* infections or outbreaks often developed in the nurseries of maternity hospitals and wards of hospitals. Clinically in addition to the visible generalized infection, *staphylococcus aureus enteritis* (abbreviated to *staph. aureus enteritis* below) also became more common every day and if not managed properly, death easily occurred. Analysis on the 30 cases seen in this hospital from January through October 1962 is now presented below. Another 18 cases, although diagnosed clinically and pathologically, the stool cultures were negative and therefore were not included in the statistics.

### Clinical Material

1. Case Selection. All cases with typical clinical course and positive stool cultures (*staph. aureus*) were

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selected as object for analysis in this article, totaling 30 cases. In 13 of these cases, pseudomembranes were found in stool specimens and pathologic sections showed large amounts of Gram-positive cocci. Stool smears in five cases showed similar bacteria and in another two cases, typical pseudomembranes stated above were found in post-mortem examinations.

II. Age Incidence and Nutritional State. Among the 30 cases, 15 cases were under three years of age; 12, 3-7 years of age; and 3, over 7 years of age. The youngest was only 10 days old and the oldest, 11 years old. It seemed that this disease was more common among infants and young children, which was in agreement with literature reports(2). The nutritional state in 16 cases showed nothing particular but the others all showed varied degrees of nutritional disturbances.

III. Location and Time of Infection. Among the 30 cases, 28 developed the infection while in the hospital and three of these were transferred from other hospitals. Time of development showed, according to analysis on data in this hospital, that 8 cases occurred within three days; 14 in 4-7 days; and 3 in more than 7 days after admission to the hospital, the longest being 13 days.

IV. Earlier Infections. Only five of 28 cases had surgical diseases earlier and only one undergone abdominal surgery during which no intestinal obstructions were observed. Two cases were staph. aureus infections of the skin following burns. There were a total of 23 medical cases, namely pneumonia in 10 cases (including staph. aureus pneumonia in 4 and measles pneumonia in two cases); bacillary dysentery, 6 cases; typhoid fever, three cases; infectious hepatitis, one case; and septicemia (blood cultures positive for staph. aureus), three cases.

V. Antibiotics employed before the infection. Antibiotics were employed in 27 cases. One single drug was employed in 14 cases (Table 1) and two drugs jointly in 13 cases (Table 2).

The drugs employed were all broad spectrum antibiotics. They were administered orally alone in 17 cases; intramuscularly alone in six cases; and orally plus intramuscularly in four cases. Dosages employed: Only 10 of the 30 cases received slightly larger than ordinary doses of antibiotics. Days of

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treatment: For 2-4 days in 19 cases; 5-7 days in 7 cases; and the longest being 9 days in one case.

VI. Clinical Characteristics

(1) Vomiting. A symptom very common in this disease occurred in a total of 25 cases. The majority occurred 1-5 days before the onset of diarrhea and the staph. aureus infection in the pharyngeal region was one of the causes for the vomiting.

(2) Diarrhea. These mostly occurred 2-4 days after antibiotics were given, starting in most cases with yellowish green beaten-egg like or green mucoid loose stools, and changing in 3-4 days into a specific dark green watery stool, very much like sea water in appearance with a rotten and fishy odor. Anus in those with more frequent diarrheas became relaxed but mostly without tenesmus. In 13 cases, grayish white flakes of pseudomembranous tissues were found in the stools 4-5 days after diarrhea started. These findings were closely related to careful searching and in the mud-like stools of explosive cases, pseudomembranes were not easy to find(3), extra care must be taken. Stool examinations: Except in cases with bacillary dysentery before the infection, in 20 of the 26 cases, pus cells or red cells were present in the mucous and in 19 of the cases, pus cells filled the field, often misdiagnosed as dysentery. However, apparent blood stools were very uncommon. Frequency of diarrhea: More than 10 movements occurred in the great majority, a total of 22 cases, and among which, 5 had more than 30 movements including 1 as many as 41. Stool volume loss: Careful estimations done in 18 cases showed each volume loss being as high as 100-300 ml in 14 cases, and that in 13 cases, the total daily loss was over 500 ml each including six cases of more than 1,000 ml, the highest reached 1,950 ml. The average volume was about 60-100 ml/kg/day (stool volume loss in toxic indigestion is about 30-40 ml/kg/day) which is very rare in intestinal infections in general and easily results in disorders of water and electrolytes.

(3) Circulatory Failure. Circulatory failure ensued during the course of disease in 21 cases and generally developed 1-3 days after diarrhea started. Blood pressure simultaneously dropped in 12 cases and in 8 of these cases, blood pressure was too low for estimations. After treatment and suitable supplementary fluid to correct water and electrolyte disorder, blood pressures in most cases returned to normal. Opinions in literature on the reason for this development were not uniform, and

the disorder of water and electrolytes was one of the common reasons. Some also believed that it was due to an increase of staphylococcus toxin(6) and those developed after surgical operations were believed related to injuries to mechanism of vascular movement(2).

(4) Other Clinical Symptoms. High fever was relatively rare at the time of onset, generally with a gradual rise in about 2-4 days and body temperature increased further after diarrhea appeared. Abdominal signs: Abdominal distention in 8 cases, abdominal pain in 10 cases, generalized or located in lower abdomen with apparently exaggerated borborygmus. Throat inflammation: apparent congestion in 19 cases with redness and swelling in 7. Skin: Allergic hyperemic skin rash seen in 7 cases, mostly developed three days after the onset of disease; desquamations seen in four cases, mostly over the extremities and in one of the cases, skin over the fingers cast off like a circular finger cover. Nervous system symptoms: Varied degrees of toxic symptoms seen in a total of 20 cases, tetany and coma developed in severe cases.

#### Chemical Examinations

I. Estimations of electrolyte concentrations in serum and stool. In 21 cases, estimations were made on serum potassium, sodium, chlorine and carbon dioxide combining power and apparent reductions in all were seen in more than 2/3 of the patients (Table 3). Non-protein nitrogen determined in 8 cases were all normal at time of admissions. In four of these cases with more severe diarrhea, non-protein nitrogen showed a gradual increase in 72 hours and was related to dehydration from the incessant diarrhea after hospitalization. Estimations of electrolytes in stools: In 16 cases, potassium and sodium were lost in large amounts through stools daily (Table 4). Potassium loss between 30-80 milligram equivalent/liter in seven cases and in five of these cases, pseudomembranes in relatively large amount were repeatedly seen in the stools which may be related to more severely damaged intestinal mucosa. Sodium loss over 60 milligram equivalent/liter in 15 cases, one of which as high as 104 milligram equivalent/liter, rarely seen in general intestinal infections, and 9 of them originally suffered from bacillary dysentery which may have been the cause.

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II. Bacterial Culture (1) Throat swab culture: In 23 cases, coagulase positive hymolytic staphylococcus aureus was cultivated from 16 before the treatment. Sensitivity test was done in 14 of these cases and only 7 were sensitive to erythromycin and one mildly to chloromycetin. (2) Stool culture: Generally the intestine culture medium cannot be used and blood plate culture medium should be used. All 30 cases in this group were positive, and only three cases were slightly sensitive to erythromycin. In two cases, cultures were negative while alive but post-mortem stool cultures were positive for staphylococcus aureus. Tarpan reported that positive cultures may often be obtained from lesions in the intestines at autopsy(8). If cultures were repeatedly sent, positive results may be easily obtained. (3) Blood culture: Negative in all 10 cases, and only in one case clinically diagnosed septicemia the blood culture was positive.

III. Pathologic Histological Examination of Pseudomembrane. Pseudomembranes were found in stools in 13 of the 30 cases. Pathologic histological sections revealed large amounts of Gram-positive cocci. In addition, among the 18 cases with negative stool cultures, sections of pseudomembranes in three cases also revealed large numbers of staphylococci and therefore, pathologic histological examinations of pseudomembranes is clinically significant in helping to make the diagnosis.

## Diagnosis and Treatment

If diagnosed early and proper treatment is given in time, this disease can generally be cured. In early diagnosis, this disease should be the first considered when in certain cases temperatures rise again after returning to normal during the course of treatment with antibiotics, and where the patient has vitality or apparent drowsiness, worsened vomiting and especially the frequent watery diarrhea in large amounts, greenish colored sea-water like stools containing mucus and the presence of pseudomembranes in formed stools. Mucus picked out of the stools sent for direct smear examination may reveal large amount of Gram-positive cocci (Table 1). Also, the loose bowel may be placed in a pan of clear water, pseudomembranes if present will float on top and be sent for pathological examinations where sections may show large amount of Gram-positive

cocci (Table 2). If drug-tolerant coagulase-positive staphylococcus aureus was recovered from the stool, the diagnosis is then definite. And if negative, repeated cultures should be made. However, negative cultures do not completely eliminate the possibility of this disease.

Early correct treatment is an important factor in hastening the cure and lowering the mortality rate. The following method of treatment is generally employed in this hospital:

(1) Rectification of shock and circulatory failure. The sick child must be immediately given appropriate amount of fluid and electrolytes, also supplementary plasma and whole blood, etc. and if necessary, pressor drugs. It is very important to determine biochemically the electrolytes before the treatment. To supplement the fluid loss in the child, 2:1 solution (2 parts 0.9% physiological saline and 1 part 1/6M sodium lactate solution) or 0.9% physiological saline is mainly used, starting with 20 ml per kilogram body weight injected rapidly under pressure intravenously within 30 minutes. If circulation was restored, 5-10% glucose solution and Darrow's solution may then be given about 40-80 ml per kilogram body weight to fundamentally rectify the dehydration within 8 hours. After this, the continued fluid loss must be supplemented accordingly or dehydration may reappear. Fluid used is mainly 5-10% glucose solution and Darrow's solution in equal amounts.

If relatively many electrolytes were lost through the bowel, the ratio of the Darrow's solution should be suitably increased. To make up the loss from vomiting and diarrhea in the child, two sets of intravenous drips are often required simultaneously. In the two severe cases, the daily supplementary fluid for loss from diarrhea reached 100 ml/kg (far more than the 30-40 ml/kg daily supplement in toxic indigestion).

(2) Employment of antibiotics and stimulin. If this disease was clinically considered, any antibiotics used before should be immediately discontinued and changed to drugs more effective on staphylococcus, and the one that is at present relatively good is erythromycin. After results of drug sensitivity tests have been obtained, the most suitable antibiotic is then chosen. In these cases, erythromycin alone was used in the treatment of five cases, erythromycin plus the employment of other antibiotics in 14 cases (including bacitracin in nine cases, novobiocin in three cases and neomycin in two cases),

novobiocin alone in two cases, bacitracin alone in two cases, and neomycin alone in one case. All of these cases showed rapid recovery clinically. In another two cases with relatively mild symptoms, and no pseudomembranes in stools, recoveries took place gradually right after the original drugs were discontinued. Among the antibiotics, bacitracin seemed to have a more apparent effect and in most cases, diarrhea recovered rapidly 3-4 days after the drug was administered, similar to Williame's experience(5). It is worthy of note that in two cases with infections outside of the intestines, conditions were aggravated after erythromycin treatment and the staphylococcus aureus recovered from stools were not sensitive to any of the antibiotics.

In cases with severe toxic symptoms, employment of stimulin may save the child's life, or in cases where antibiotic treatment is not effective, switching to stimulin may result in a cure(6). Prohaska reported seven cases among which three showed rapid improvement after the employment of stimulin(2). He believed that antibiotics could not reach a high concentration within a short time to destroy the bacteria and that toxin meanwhile was produced in large amounts causing death of the patient, and if stimulin was administered, toxic symptoms would be rapidly alleviated. This corresponded with the results in this article on the six cases in which stimulin was employed.

(3) Immediate nutritional supplement during convalescence. Due to the extensive changes in the intestinal tract and that small intestines were more damaged than the colon, the nutrient absorbing surface of the intestinal mucosa was apparently reduced and patients in convalescence very often developed severe malnutrition. We determined the plasma protein in 8 cases and 6 showed hypoproteinemia (albumin all below 2.5 gm% and total protein below 4.5 gm%). Therefore protein in large quantities and supplementary vitamins are all not to be neglected. It is better to supplement simultaneously from routes aside from the gastrointestinal tract because the oral route alone may aggravate the intestinal dysfunction.

#### Mortality

Among the 30 cases, four died all because definite diagnosis was not made in time. Two of the cases were too late

to be saved when positive stool cultures were reported. The other two cases had more typical symptoms but due to the lack of understanding of this disease, the antibiotics originally employed were not discontinued in time or supplemented with effective antibiotics and the definite diagnosis was only made through autopsy. Therefore, in this disease, definite diagnosis should be made early and suitable management undertaken since severe cases often die because of the diagnosis is made too late.

### Discussion

### Conclusion

(1) A preliminary summary was made on 30 cases of staphylococcal enteritis and the bacterium was mainly the drug-tolerant coagulase-positive hemolytic staphylococcus aureus.

(2) In addition to surgery as one of the causes in the development of this disease, the use of the broad spectrum antibiotics has created a disturbance of intestinal flora so that drug-tolerant bacteria multiply in abundance, liberated large amount of toxin that caused the lesions in the intestinal tract. In addition, changes in the reactivity of the organisms, such as relatively young in age, nutritional disorder, chronic wasting diseases and convalescing from infectious diseases or staphylococcal infections outside of intestinal tract, may all prompt the development of this disease.

(3) The 28 cases that developed this disease in the hospital were related to the greater chance of infection in hospitals, the universal employment of antibiotics as well as the increased number of drug-tolerant strains of bacteria.

(4) Mastering the clinical characteristics of this disease such as the nature of diarrhea, sea-water-like stools and the presence of pseudomembranes, bacteriological examinations and etc. is helpful in an early diagnosis.

(5) Treatment should be of immediate rectification of shock and circulatory failure and suitable employment of antibiotics to control the infection rendering a rapid recovery of the condition. In the four cases that died, none had obtained diagnosis and proper management in time.

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(6) There is a tendency of increase in the incidences of this disease developed in hospitals and the mortality rate is also relatively high. Hence preventive measures well worked out and avoiding cross infections is now an important duty of children's hospitals.

(CONFIDENTIAL)

INTRODUCING THE ARCHITECTURAL PLAN OF A 320  
BED CHILDREN'S GENERAL HOSPITAL AND  
OPINIONS ON THE UTILITY

[Following is a translation of selected portions of an article by Ch'i Chia-i, Department of Pediatric internal medicine, Hsin Hua Hospital, Shanghai Medical College No. 2; and Feng Chi-hui, Department of Foundation & Construction, Hsin Hua Hospital, Shanghai Medical College No 2; in the Chinese-language periodical Chung-hua Erh-k'o Tsa-chih (Chinese Journal of Pediatrics), Vol 12, No 1, Peiping, February 1963, pages 55-59.]

The design of a hospital affects directly the therapeutic work and management. The requirements of a children's hospital again differ from an adult one. First, due to the relatively low resistance in children, especially while ill, good conditions for isolation and sterilization must be offered in the architectural planning to avoid interchanging of infections. Secondly, children of different ages are very different in their characters and physiological activities and in the planning, management convenience and educational applications should also be taken into account to insure the sick children's safety and happiness.

In the designing of the pediatric building of the Hsin Hua Hospital, Shanghai, although these two requirements were taken into consideration, but due to limitation of certain conditions, some problems still existed. The architectural plan and the advantages and disadvantages of its utility are now introduced

as follows, to serve as references for new constructions of children's hospitals.

### General Arrangement

The Hsin Hua Hospital is a collateral general hospital of the Shanghai Medical College No 2 with establishment of various adult and children's departments and various supplementary therapeutic divisions. Due to the expanded therapeutic work and requirement for clinical teaching and also the different systems of living between children and adults, facilities for different environment are needed. To meet the requirements of every aspect, the pediatric building was built. This big building is one of the departments of the whole hospital and therefore it has no administrative office, central supply room or employee dining room, dormitory and such servicing rooms. As to the children's welfare department, it was originally planned to be housed in another new building, hence also not included in the plan.

The pediatric building occupied an area of 9,118 square meters in an "H" shaped arrangement. The outpatient and emergency departments are close to the street on two floors, and the emergency room is to the east of the outpatient clinic for the convenience of the entering and departing families of the sick as well as isolating children with communicable diseases from the sick children in general. The hospital consists of four floors; the west side of the ground floor is the section for acute gastrointestinal infections; the east side, the second floor and the fourth floor are the medical section; and the third floor is surgery and departments for the five senses, located further away from the street for quietness. The ground-level of the middle of the "H" consists of the registration room, oral surgery, admission sanitary room, admission registry and social service. The second floor of the middle part consists of the radiology department, physiotherapy and examination laboratories. The third floor consists of the library, record room and department offices; and the fourth floor, nutrition and milk preparation rooms in the southern section and students' laboratories in the northern section. This arrangement prevents sick children in the clinic from entering the hospital section and disturbing the peace, and also facilitates the coming and going of the medical and nursing personnel, elevated the efficiency of work.

Nutrition and milk preparation rooms located in the middle section of the big building insure warm meals and ease of fetching, shortened the working time. From the utilization point of view, the general arrangement, is fundamentally right. However, when children with infectious diseases are admitted to the ward, they must be brought in in a round-about way, otherwise, they will meet with children with other diseases and this is a relatively big disadvantage.

### Outpatient Department

I. Pre-examination room. Also called preliminary examination station, it consists of six small rooms, each having a front and a back door (Diagram 1). Patients generally enter through the front door and then leave after preliminary examinations through the back door to the registration room. If a child with infectious disease is discovered, he then will be sent out through the same door to wait for examination in the isolation clinic and this pre-examination room will be closed, sterilized with ultra violet rays, and the pre-examinations carried out in another room. When a sporadic case of non-epidemic infection is encountered, the case will remain in that room to be treated, and sterilization of the room carried out after the patient has been sent out.

II. Isolation Clinic. Situated beside the pre-examination rooms consisting of four rooms not communicating with one another, each with its own door for entering and leaving. Each room is equipped with a foot peddle operated faucet wash basin. There is another room for preparation of treatment, equipped with a movable basket hanging down from the hospital pharmacy on the second floor so that drugs for children with infectious diseases may be sent down to avoid their entering of the outpatient pharmacy or extra work for the employees in getting drugs for the patients. However, no toilet facilities have been installed in the isolation clinic, and this is a very big disadvantage.

III. Waiting room. The waiting rooms of medical and dermatological departments are located downstairs and those of eye and ear, nose and throat, upstairs. This arrangement of centralized registrations and departmental waiting rooms is very significant in reducing crowding and preventing mutual

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infections. However, in the summer time, when patients are relatively more in number (when there are more than 200 patients) and clinic hours are more close together, the waiting rooms are then seemingly crowded and noisy. This is due to the fact that one child may be accompanied by two family members which had not been taken into consideration while planning.

IV. Examination room. There are six rooms in the medical department, each having the capacity for two examination tables and small doors connecting with the adjoining rooms for nurses to come back and forth while watching in order to guide the patients readying for the examinations.

In addition, there is a large demonstration room for practicing students so that the educational work may be separated from the general therapy to lessen confusion. In surgery, there are two examination rooms and one large dressing room, aseptic and septic operating rooms one each (Diagram 2). Generally, minor surgery may be managed at the outpatient section without entering the main operating rooms thus reduced the chance of contaminations.

In addition, there is an orthopedic examination room and a plaster of Paris room, the latter for removal of casts for outpatients. The eye clinic for example, is equipped with an operating rooms for minor surgery, examination rooms, demonstration rooms and dark room etc.; and in the ear, nose and throat department, there also is a complete set of examination rooms, sound proof room, and treatment rooms, relatively well-equipped and fairly convenient for utilization. The department of oral surgery is located on the ground level of the "H"-shaped construction near the front entrance and is equipped with examination room, operating room and preparatory room, convenient for patients to enter for treatment after the pre-examination as well as for examining the healthy children coming in through the front door.

V. Pharmacy in the outpatient clinic. Chinese herb section and western drug section are both located at the west end on the ground level facing the pre-examination rooms so that patients after being seen and having obtained their medicine may leave the hospital along a one-way route and not to come in contact with those children waiting for the pre-examinations.

In summing up, the design and utility aspect of the outpatient department have fundamentally reached the goal of avoiding mutual infections and convenience in management.

#### Emergency and Observation Rooms

The emergency clinic is to the east of the outpatient clinic, near the street with a separate entrance and one of the doors is connecting with the isolation clinic for the convenience of the medical and nursing personnel to save time. Children with infectious diseases coming to the emergency clinic are still seen in the isolation rooms of the outpatient clinic. There are one large waiting room, two examination rooms and four observation rooms for temporary observations or treating of serious cases. The arrangement in each room is seen in diagram 1. The emergency clinic is relatively far from the outpatient pharmancy and is not convenient for sick children's families to go back and forth. The waiting room is too small and seems crowded in busy seasons. The observation rooms can only accommodate 12 beds which are not enough. These are the disadvantages noticed after utilization.

#### Hospital Registry, Social Service and Admission Sanitary Room

The hospital registry and social service are both located on the ground level at the middle of the "H" with a big entrance on the side for the convenience of patients' families to come and go to transact business and visit patients in the hospital. Admission sanitary room is located opposite the admission office, equipped with admission examination room, storage room for patients' clothing, barber shop, children's bathing room, and infants' bathing room. Patients, after bathing and changing, may go directly to the wards through the clean door. The cleaning up work for infectious cases is carried out in the infectious disease section (see diagram 1). The admission sanitary room lacks a toilet and a room for managing soiled substances, a great inconvenience in working.

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## The Hospital Wards

There are four floors of wards, one east and one west sections on each floor and each section consists of six wards accommodating 40 beds as a single unit for nursing cares. The nursing station is located in the center and activities on the wards may be observed from here through glass partitions. Each ward has a small connecting door (except in the infectious disease sections), with the adjoining ward. When relatively few nurses are present at night time, they may pass through the small doors to take care of patients. The first room next to the entrance to the wards is divided into six compartments with glass partitions to take care of the patients admitted with diagnosis unknown for the convenience of observations (in the infectious disease section, each ward is similar to the first room). The food preparation room, chemical laboratories, treatment room, student demonstration room, critical case room (family is allowed to keep company), nurses' dressing room, bathroom and soiled-matter room are located opposite the wards. There is a room for physicians on duty, a room for nursing infants and a room for activities located in between the two sections of wards. The soiled-matter room is equipped with a bottom-less cupboard leading down directly to the soiled clothing room on the ground level and the exist is separated from the wards. Outside of the soiled-matter room is a small terrace with a trash box on one side connecting also to the ground level. When the door to the terrace is closed, it will stop the foul air from getting into the wards.

The design of the wards has its advantages in saving manpower and elevating work efficiency but the soil-matter room area is too small and seems to be cramped for managing the excreta, sterilizing bedpans and sorting diapers. The ward section lacks a storage room where oxygen tanks, saline infusion stands and other miscellaneous things may be stored. Treatment rooms need wall cupboards to keep medicines and therapeutic equipments. In the infectious disease section, there are no toilets and bathrooms on the various wards, making sterilization and isolation very difficult.

## Supplementary Therapeutic Section

The radiology department, examination and test department, physiotherapy department and pharmaceutics department are all designed (diagram 2) to serve patients from the outpatient and emergency clinics as well as taking care of hospitalized children. The physiotherapy department consists of only phototherapy and electrotherapy and others such as hydrotherapy, waxtherapy and etc. have not been considered because of age characteristics of patients. The pharmaceutics room is connected with the hospital pharmacy, preparing drugs for injections and carrying out the process of mixing compounds, infusion fluids and sealing, etc. In addition, there are rooms for bottle washing, sterilization, analysis, storage and etc. forming an independent unit.

However, the bacteriological laboratory is located on the corner of the hall where many people pass by and, viewed from the standpoint of sterilization and isolation, it is not quite right. If the bacteriological laboratory was switched with the pharmaceutic room, the above disadvantage may then be avoided.

Diagram 1 Floor plan of the ground level

Diagram 2 Floor plan of the second level

Diagram 3 Floor plan of the third level

Diagram 4 Floor plan of the fourth level

## Operating Room

The operating rooms are located above the pharmaceutic room and biochemical laboratories forming a one-level communication with the surgical wards, relatively convenient for sending patients to and back from surgery. On either side of the operating rooms are men and women's shower baths and dressing rooms for medical and nursing personnel to change their gowns, caps, masks, and shoes and stockings coming and leaving. The arrangement of the operating rooms is seen in diagram 3. The

advantages are: sufficient lighting; the offices, anesthesia rooms, and instrument rooms are suitably sized; and designed to satisfy utilization requirement. The plaster cast room is located outside of the operating room keeping the inside of the operating rooms clean.

The soil-matter washroom is equipped with many wash basins simplifying the separate managements of varied soiled matters. The disadvantages are that operating rooms are relatively far away from the wards and that no floor drainage is installed in the rooms so that scrub water has no outlet. There is no room for spectators, a great inconvenience in surgery demonstrations.

#### Nutrition and Milk Preparation Station

The nutrition room is located in the middle section of the "H" on the fourth floor near one end of the wards with self opening and closing doors to prevent grease and cooking odors from dispersing into the wards. At the entrance is a bathroom for cooks to bathe and change before coming on duty. Other rooms are arranged in order according to work (see diagram 4). The entrance for uncooked food and exist for cooked food are separately routed and hot food may be separately sent to the varicus wards by small elevators.

The milk preparation station is right next to the nutrition room with separate bottle washing room, refrigeration room, formula room and student laboratory, arrangement, however, agrees with aseptic requirement.

#### Conclusion

This article has introduced the architectural plan of the pediatric building of Hsin Hua Hospital, Shanghai Medical College No 2 and some apprehensions on its utilization. The advantages are:

- I. Close together arrangement, convenience in management and conservation of manpower.

II. The preliminary examination followed by centralized registration and departmental waiting rooms reduced chances of mutual infections and crowding phenomenon.

III. The well-designed various clinics in the outpatient department elevated the efficiency in clinical work.

IV. The reasonably arranged wards facilitated nursing and educational purposes.

V. The nutrition and milk preparation room located inside the building insured warm meals for the patients.

IV. The supplementary therapeutic departments are serving the clinic and emergency patients well as well as taking care of the hospitalized.

However, due to limitation of conditions, certain aspects of the planning still have not met with business requirements. For example:

I. The slightly small waiting room area in the pediatric medical clinic becomes crowded when more patients are present.

II. The emergency observation rooms are too few, unable to accommodate all the patients for fluid replacements during summer seasons.

III. Each infectious disease ward and the isolation clinic lack toilets and the infectious wards lack wash-rooms rendering sterilization and isolation very difficult.

IV. When admitting patients with infectious diseases to the wards, portion of the route is thoroughfare for patients in general, possibility of cross infection existed.

Opinions stated above may serve as references to new constructions of children's hospitals.

(CONFIDENTIAL)

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**UNCLASSIFIED**  
Central Intelligence Agency



Washington, D.C. 20505

7 September 2004

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Ft. Belvoir, VA 22060

Dear Ms. Schoen:

In February of this year, DTIC provided the CIA Declassification Center with a referral list of CIA documents held in the DTIC library. This referral was a follow on to the list of National Intelligence Surveys provided earlier in the year.

We have completed a declassification review of the "Non-NIS" referral list and include the results of that review as Enclosure 1. Of the 220 documents identified in our declassification database, only three are classified. These three are in the Release in Part category and may be released to the public once specified portions of the documents are removed. Sanitization instructions for these documents are included with Enclosure 1.

In addition to the documents addressed in Enclosure 1, 14 other documents were unable to be identified. DTIC then provided the CDC with hard copies of these documents in April 2004 for declassification review. The results of this review are provided as Enclosure 2.

We at CIA greatly appreciate your cooperation in this matter. Should you have any questions concerning this letter and for coordination of any further developments, please contact Donald Black of this office at (703) 613-1415.

Sincerely,

A handwritten signature in black ink, appearing to read "Nancy Jackson" or "Nancy J. Jackson".

Sergio N. Alcivar  
Chief, CIA Declassification Center,  
Declassification Review and Referral  
Branch

Enclosures:

1. Declassification Review of CIA Documents at DTIC (with sanitization instructions for 3 documents)
2. Declassification Status of CIA Documents (hard copy) Referred by DTIC (with review processing sheets for each document)

**UNCLASSIFIED**



## Processing of OGA-Held CIA Documents

The following CIA documents located at DTIC were reviewed  
by CIA and declassification guidance has been provided.

OGA Doc ID	Job Num	Box	File#	Doc	Doc ID	Document Title	Pub Date	Pages	Decision	Proc Date
AD0343932	78-03117A	213	1	18	5117	Scientific Information Report Chinese Science (34)	10/22/1963	89	Approved For Release	3/29/2004
AD0344702	78-03117A	214	1	21	5149	Scientific Information Report Chinese Science (35)	11/4/1963	133	Approved For Release	3/29/2004
AD0344965	78-03117A	215	1	4	5163	Scientific Information Report Chinese Science (36)	11/7/1963	133	Approved For Release	3/29/2004
AD0345229	78-03117A	215	1	23	5182	Scientific Information Report Chinese Science (37)	11/18/1963	179	Approved For Release	3/29/2004
AD0345750	78-03117A	216	1	20	5209	Scientific Information Report Chinese Science (38)	12/11/1963	174	Approved For Release	3/29/2004
AD0344419	78-03117A	217	1	20	5241	Scientific Information Report Chinese Science (39)	12/27/1963	75	Approved For Release	3/29/2004
AD0346493	78-03117A	218	1	21	5277	Scientific Information Report Chinese Science (40)	1/10/1964	115	Approved For Release	3/29/2004
AD0346725	78-03117A	219	1	27	5320	Scientific Information Report Chinese Science (41)	1/27/1964	78	Approved For Release	3/29/2004
AD0347051	78-03117A	220	1	25	5359	Scientific Information Report Chinese Science (42)	2/6/1964	78	Approved For Release	3/29/2004
AD0347849	78-03117A	221	1	39	5407	Scientific Information Report Chinese Science (43)	3/2/1964	174	Approved For Release	3/29/2004
AD0347929	78-03117A	222	1	25	5438	Scientific Information Report Chinese Science (44)	3/5/1964	104	Approved For Release	3/29/2004
AD0348352	78-03117A	223	1	20	5479	Scientific Information Report Chinese Science (45)	3/20/1964	117	Approved For Release	3/29/2004
AD0349491	78-03117A	225	1	18	5560	Scientific Information Report Chinese Science (46)	4/24/1964	118	Approved For Release	3/29/2004
AD0349657	78-03117A	225	1	34	5581	Scientific Information Report Chinese Science (47)	5/4/1964	98	Approved For Release	3/29/2004
AD0332751	78-03117A	183	1	29	3940	Scientific Information Report Electronics And Engineering (22)	10/19/1962	68	Approved For Release	3/29/2004
AD0333146	78-03117A	186	1	20	4041	Scientific Information Report Electronics And Engineering (23)	11/23/1962	73	Approved For Release	3/29/2004
AD0334103	78-03117A	188	1	37	4136	Scientific Information Report Electronics And Engineering (24)	12/20/1962	62	Approved For Release	3/29/2004
AD0334236	78-03117A	190	1	40	4217	Scientific Information Report Electronics And Engineering (25)	1/22/1963	48	Approved For Release	3/29/2004
AD0334769	78-03117A	193	1	39	4339	Scientific Information Report Electronics And Engineering (26)	2/28/1963	68	Approved For Release	3/29/2004
AD0335480	78-03117A	196	1	17	4436	Scientific Information Report Electronics And Engineering (27)	3/21/1963	95	Approved For Release	3/29/2004
AD0336306	78-03117A	199	1	2	4538	Scientific Information Report Electronics And Engineering (28)	4/25/1963	69	Approved For Release	3/29/2004
AD0332433	78-03117A	183	1	35	3946	Scientific Information Report Organization And Administration Of Soviet Science (5)	10/22/1962	60	Approved For Release	3/29/2004